

AD-A248 941



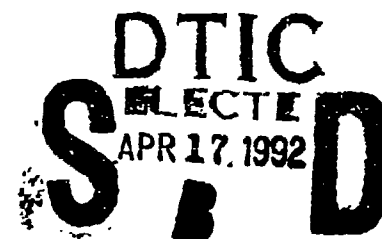
AD-A248 941
Copy 37 of 134 copies

2

IDA PAPER P-2560

BATTLE STAFF INTEGRATION

Joseph A. Olmstead



February 1992

Prepared for
Defense Advanced Research Projects Agency

Approved for public release; distribution unlimited.

92-09812



INSTITUTE FOR DEFENSE ANALYSES
1801 N. Beauregard Street, Alexandria, Virginia 22311-1772

92 4 16 017

IDA Log No. HQ 91-37013

DEFINITIONS

IDA publishes the following documents to report the results of its work.

Reports

Reports are the most authoritative and most carefully considered products IDA publishes. They normally embody results of major projects which (a) have a direct bearing on decisions affecting major programs, (b) address issues of significant concern to the Executive Branch, the Congress and/or the public, or (c) address issues that have significant economic implications. IDA Reports are reviewed by outside panels of experts to ensure their high quality and relevance to the problems studied, and they are released by the President of IDA.

Group Reports

Group Reports record the findings and results of IDA established working groups and panels composed of senior individuals addressing major issues which otherwise would be the subject of an IDA Report. IDA Group Reports are reviewed by the senior individuals responsible for the project and others as selected by IDA to ensure their high quality and relevance to the problems studied, and are released by the President of IDA.

Papers

Papers, also authoritative and carefully considered products of IDA, address studies that are narrower in scope than those covered in Reports. IDA Papers are reviewed to ensure that they meet the high standards expected of refereed papers in professional journals or formal Agency reports.

Documents

IDA Documents are used for the convenience of the sponsors or the analysts (a) to record substantive work done in quick reaction studies, (b) to record the proceedings of conferences and meetings, (c) to make available preliminary and tentative results of analyses, (d) to record data developed in the course of an investigation, or (e) to forward information that is essentially unanalyzed and unevaluated. The review of IDA Documents is suited to their content and intended use.

The work reported in this document was conducted under contract MDA 903 89 C 0003 for the Department of Defense. The publication of this IDA document does not indicate endorsement by the Department of Defense, nor should the contents be construed as reflecting the official position of that Agency.

IDA PAPER P-2560

BATTLE STAFF INTEGRATION

Joseph A. Olmstead

February 1992

Approved for public release: distribution unlimited.



INSTITUTE FOR DEFENSE ANALYSES

Contract MDA 903 89 C 000 1

DARPA Assignment A-132

REPORT DOCUMENTATION PAGEForm Approved
OMB No. 0704-0188

Public Reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188) Washington, DC 20503.

1. AGENCY USE ONLY (Leave blank)		2. REPORT DATE February 1992	3. REPORT TYPE AND DATES COVERED Final-1989-1991
4. TITLE AND SUBTITLE Battle Staff Integration			5. FUNDING NUMBERS C - MDA 903 89 C 0003 T - A-132
6. AUTHOR(S) Joseph A. Olmstead			
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Institute for Defense Analyses 1801 N. Beauregard St. Alexandria, VA 22311-1772			8. PERFORMING ORGANIZATION REPORT NUMBER IDA Paper P-2560
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES) Defense Advanced Research Projects Agency 3701 North Fairfax Drive Arlington, VA 22203-1714			10. SPONSORING/MONITORING AGENCY REPORT NUMBER
11. SUPPLEMENTARY NOTES			
12a. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution unlimited.			12b. DISTRIBUTION CODE
13. ABSTRACT (Maximum 200 words) This paper sets forth a research-based conceptual framework for understanding and addressing battle staff functioning and its relation to the effectiveness of combat organizations. It also develops a concept for maintaining battle staff structure and function under the heavy stress of combat. Together, the melding of structure and function and the notion of functional competence constitute the area of Battle Staff Integration. This paper offers practitioners (military leaders, trainers, and performance analysts) guidance for developing and directing effective battle staffs. The dynamic structure and functioning of military organizations are discussed and the roles of battle staffs are analyzed. An historical and analytical review of organizational theories and concepts is included, and the concept of team work and the characteristics of effective teams are discussed. A conceptual framework is presented for teamwork in problem-solving and decision-making activities within hierarchical organizations.			
14. SUBJECT TERMS Command and Control; Battle Staff; Military Effectiveness; Team Performance; Organizational Effectiveness; Group Decision Making; Leadership; Training			15. NUMBER OF PAGES 229
			16. PRICE CODE
17. SECURITY CLASSIFICATION OF REPORT UNCLASSIFIED	18. SECURITY CLASSIFICATION OF THIS PAGE UNCLASSIFIED	19. SECURITY CLASSIFICATION OF ABSTRACT UNCLASSIFIED	20. LIMITATION OF ABSTRACT SAR

PREFACE

This paper had its origin in 1963 in a program of research concerned with high-level leadership conducted for the U.S. Army Command and General Staff College and of which I was project director. During the course of the research, it became apparent that little was known systematically about the dynamics of large military organizations--about what goes on within a combat unit in terms of the dynamic determinants of its effectiveness on the battlefield. The result was a series of intermittent projects over the last 20 years, conducted whenever it was possible to stimulate some interest in the issues of organizational performance and ways of improving the effectiveness of organizations.

Very early, it became apparent that one of the most important elements in the effectiveness of a combat organization is the command and control system and those personnel who man it, namely the battle staff. Accordingly, focus has more and more been centered upon the functioning of the battle staff and factors leading to its functional integration.

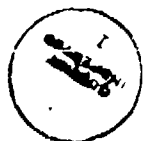
Throughout, the projects were both theory-based and application-centered. Similarly, this paper attempts to present both conceptualization and implications for application; theoretical backgrounds, conceptual models, and practical guidance for leaders and practitioners are all included.

I am indebted to many individuals who have contributed to the material. I am especially indebted to all those individuals in the "green suits" who served as subjects, experimenters, or trainers in the numerous studies encompassed here.

Special gratitude is due COL Dandridge M. (Mike) Malone (U.S. Army, Ret.), whose continued faith over many years resulted in bringing Battle Staff Integration to fruition.

Mike Malone and Dr. J. Dexter Fletcher, IDA, were the instigators and stimulators for the paper. Dr. Fletcher supervised the project.

Accession For	
NTIS GRA&I	<input checked="checked" type="checkbox"/>
DTIC TAB	<input type="checkbox"/>
Unannounced	<input type="checkbox"/>
Justification	
By	
Distribution/	
Availability Codes	
Dist	Avail and/or Special
A-1	



ABSTRACT

This paper sets forth a research-based conceptual framework for understanding and addressing battle staff functioning and its relation to the effectiveness of combat organizations. It also develops a concept for maintaining battle staff structure and function under the heavy stress of combat. Together, the melding of structure and function and the notion of functional competence constitute the area of Battle Staff Integration. This paper offers practitioners (military leaders, trainers, and performance analysts) guidance for developing and directing effective battle staffs. The dynamic structure and functioning of military organizations are discussed and the roles of battle staffs are analyzed. An historical and analytical review of organizational theories and concepts is included, and the concept of teamwork and the characteristics of effective teams are discussed. A conceptual framework is presented for teamwork in problem-solving and decision-making activities within hierarchical organizations.

CONTENTS

Preface	iii
Abstract	v
Tables	xi
Figures	xiii
EXECUTIVE SUMMARY	S-1
I. INTRODUCTION	I-1
A. Purpose	I-1
B. Critical Elements of Combat Effectiveness	I-1
1. The Modern Battlefield	I-2
2. Required Capabilities	I-3
C. Essential Human Factors	I-3
D. Organization of the Paper	I-4
E. Military Unit of Focus	I-5
II. THE BATTLE STAFF	II-1
A. The Military Organization	II-1
1. Organizational Structure	II-2
B. Functions of the Battle Staff	II-3
1. Command and Control	II-4
2. Organizational Process	II-4
C. Problems in Battle Staff Functioning	II-5
1. Some General Pitfalls	II-5
2. Effects of Battlefield Pressures	II-6
3. Coping with Battlefield Pressures	II-9
D. Summary	II-10
III. THEORETICAL BACKGROUND	III-1
A. The Literature on Organizations	III-1
1. Structural Theories	III-2
2. Group Theories	III-5
3. Individual Theories	III-7
4. Decision Theories	III 11

B. The Issues and a Resolution	III-14
1. General Systems Theory.....	III-17
C. Organizational Processes	III-20
IV. TEAMWORK IN BATTLE STAFFS.....	IV-1
A. The Battle Staff as Team	IV-1
1. Premises	IV-4
2. Definitions	IV-4
3. Battle Staffs as Open Social Systems	IV-4
B. Battle Staff Functions.....	IV-8
1. Requirements for Effective Functioning	IV-9
C. Characteristics of Effective Teams	IV-11
D. Cohesion and its Effects.....	IV-14
1. Effects of Cohesion	IV-14
2. Conditions Necessary for Cohesion.....	IV-16
E. Teamwork.....	IV-22
1. The Nature of Teamwork	IV-22
2. Determinants of Teamwork.....	IV-23
V. A MODEL FOR ORGANIZATIONAL COMPETENCE.....	V-1
A. Organizational Competence	V-1
B. The Competence Model	V-2
1. Components of Competence	V-2
2. Organizational Processes	V-3
C. Tests of the Model	V-6
1. Project FORGE	V-6
2. Method.....	V-6
3. Data.....	V-10
4. Results	V-13
5. Conclusions from Project FORGE	V-33
6. Project Cardinal Point.....	V-34
7. Data.....	V-38
8. Results	V-40
9. Conclusions from Project Cardinal Point.....	V-44
D. Implications	V-45
VI. A MODEL FOR BATTLE STAFF INTEGRATION	VI-1
A. Assessment of Training and Development Models.....	VI-1
1. Attributes of a Practical Training and Development Model	VI-1
B. Battle Staff Integration.....	VI-2
C. The Integration Model	VI-4
1. Necessary Organizational Conditions	VI-4
2. Necessary Developmental Activities.....	VI-7
3. Assessment Issues.....	VI-8
4. Evaluation of the Integration Model	VI-9

VII. IMPLEMENTATION	VII-1
A. Implications for Implementation.....	VII-1
1. Military Units as Systems	VII-1
2. Developing Organizational Competence	VII-3
3. Maintaining Competence	VII-7
B. Implementing Battle Staff Integration.....	VII-7
VIII. REQUIREMENTS FOR LEADERS	VIII-1
A. Required Organizational Attributes.....	VIII-1
B. Essential Conditions	VIII-3
C. Leading the Battle Staff	VIII-4
1. Developing Organizational Conditions for Teamwork	VIII-6
D. A Role for the Executive Officer	VIII-10
IX. DEVELOPING AN EFFECTIVE BATTLE STAFF.....	IX-1
A. Implementing Organizational Competence	IX-1
1. The Adaptive Coping Cycle	IX-2
2. Identifying Critical Environments	IX-3
3. Sensing	IX-4
4. Communicating Information	IX-8
5. Decision Making	IX-9
6. Stabilizing	IX-10
7. Communicating Implementation	IX-11
8. Coping Actions	IX-13
9. Feedback.....	IX-14
B. Battle Staff Effectiveness.....	IX-15
1. A Battle Staff Effectiveness Model	IX-16
C. Developing Integration	IX-19
1. Necessary Organizational Conditions	IX-19
2. Necessary Developmental Activities.....	IX-20
D. Improving Competence in Battle Staffs	IX-23
1. Analyzing and Assessing Organizational Competence	IX-23
2. Some Caveats	IX-27
X. CONCLUSION.....	X-1
A. Some Basic Concepts.....	X-1
B. Organizational Effectiveness	X-2
1. Combat Units as Open Systems	X-3
2. Concept of Organizational Competence.....	X-5
C. Competence as Flexibility	X-5
D. Military Organizations	X-6
E. Battle Staff Integration.....	X-7
1. Factors Affecting Integration	X-9
2. Teamwork	X-12
3. Training and Development.....	X-13

F. Rapid Response Organizations	X-14
G. Other Organizations	X-14
REFERENCES	R-1

Appendix A--General Questions About Battle Staff Competence.....	A-1
Appendix B--Operational Definitions for Organizational Processes	B-1
Appendix C--Criteria for Assessing Quality of Process Performance.....	C-1
Appendix D--Process Assessment Form	D-1
Appendix E--Battle Staff Competence Survey	E-1

TABLES

V-1.	Characteristics of Experimental Subjects	V-7
V-2.	Characteristics of Simulation Inputs.....	V-9
V-3.	Summary of Organizational Activities	V-14
V-4.	Summary of Frequencies and Scores for Major Variables and Sub-Variables	V-14
V-5.	Intercorrelations: Major Variables and Sub-Variables	V-16
V-6.	Intercorrelations: Effectiveness, Competence, and Processes	V-20
V-7.	Summary of Multiple Correlation Between Processes and Combat Effectiveness	V-21
V-8.	Competence Performance of High Effectiveness and Low Effectiveness Groups Under Differing Degrees of Environmental Pressure.....	V-25
V-9.	Analysis of Variance for Phase Competence of High and Low Effectiveness Groups	V-25
V-10.	Process Performance of High and Low Effectiveness Groups Under Differing Degrees of Environmental Pressure.....	V-28
V-11.	Summary Data for Process Performance and Combat Effectiveness-- Cardinal Point	V-40
V-12.	Comparison of Process Performance of More and Less Combat-Effective Battalions--Cardinal Point	V-42
V-13.	Analysis of Variance for Effects of Modules Upon Process Performance--Cardinal Point	V-42
V-14.	Paired t Statistics for Module Differences in Organizational Competence--Cardinal Point	V-43

FIGURES

V-1.	Effects of Sensing and Communicating Information Upon Quality of Decisions	V-22
V-2.	Effects of Decision Making and Communicating Implementation Upon Quality of Coping Actions	V-22
V-3.	Mean Probe Competence Scores for High and Low Effectiveness Groups Under Environmental Pressure.....	V-25
V-4.	Aborted Decisions of High Effectiveness and Low Effectiveness Groups	V-32
VI-1.	The Integration Model.....	VI-4
IX-1.	Battle Staff Effectiveness Model	IX-16

EXECUTIVE SUMMARY

The subject of this paper is organizational effectiveness and, more specifically, some important human factors that contribute to the combat effectiveness of large military organizations. These particular human factors are centered in the collective and integrated judgments and actions of key unit personnel who comprise "the battle staff," the command and control personnel within a unit. The competence of a battle staff in performing its essential functions as a unified, integrated system can be a major determinant of combat effectiveness. Today, there is mounting evidence that maximum effectiveness can be achieved only when a battle staff addresses directly the quality of its organizational functioning and develops capabilities that will enable it to maintain functional integrity under the stress of battlefield pressures.

This paper sets forth a sound, research-based conceptual framework for understanding and addressing battle staff functioning and its relationship to the effectiveness of combat organizations; it also provides practitioners (military leaders, trainers, and performance analysts) with concrete guidance for implementing the concepts so as to develop and direct effective battle staffs.

A. DESCRIPTION OF THE BATTLE STAFF

The modern battlefield is characterized by:

- (1) Extreme rapidity of critical events
- (2) High levels of turbulence
- (3) Increasingly unpredictable combat environments
- (4) Increasingly complex combat operations.

To be effective under such conditions, combat units must possess organizational capabilities to:

- (1) Search out, accurately identify, and correctly interpret the properties of operational situations *as they develop*.
- (2) Solve problems *as they occur* within the context of rapidly changing situational demands.

- (3) Generate *flexible decisions* relevant to changing situations.
- (4) Cope with *shifting situational demands* with precise appropriateness.

Members of the battle staff perform all functions needed to provide direction to the unit and to maintain unit activities at high levels of effectiveness. The interaction whereby information, decisions, and actions are brought into conjunction involves a complex interplay between levels in the chain of command. The constant interplay that occurs is the essence of organizational functioning.

B. BATTLE STAFF FUNCTIONS AND INTEGRATION

The discussion of the battle staff functioning and integration begins with a survey of the organizational literature and the theories and concepts relevant to military organizations. An open system approach to military units is found to be the most practicable approach for understanding and improving battle staff performance. According to open systems theory, an organization is an adaptive, equilibrium-seeking, open system, and the processes through which adaptation occurs are significant subjects for attention.

Battle staff integration is closely related to, if not identical with, "teamwork." Accordingly, it seems most practicable to develop an approach to battle staff integration within the context of teamwork. A unique feature of the battle staff as a team is that, at one time or another and to some degree, any and all of its functions may be performed by one or every member, either individually or collectively. Integration occurs when members are committed and hold shared values and common norms about the performance of their respective roles.

Requirements for effective battle staff functioning include the following:

- (1) Role-Specific Individual Skills--the skills required to perform those activities, specific to the respective battle staff roles and which are performed independently of other team members. Although an element of all battle staff role definitions, coordinative skills are not "individual skills."
- (2) Team-Performance Skills--the skills needed to execute activities/actions that are performed in response to the actions of other team members or that guide/cue the actions of other team members. Although they are the skills of individual members, they contribute to the performance of team functions. In effect, these are the skills of coordination. They are skills that must be performed by the several battle staff members to ensure that everyone is kept informed and that all activities mesh efficiently. Included are skills required to execute the various processes subsumed under organizational competence.

- (3) Integration--the force which melds the roles, attitudes, and activities of battle staff members. Integration refers to the cohesion of the battle staff as a group. Cohesion produces a coincidence of the psychological fields of members. This shared perspective is "battle staff integration."

C. OPERATIONAL MODELS FOR AN EFFECTIVE BATTLE STAFF

Two models are presented that compose an operational framework for developing effective battle staffs, an operational model for Organizational Competence and a model for Battle Staff Integration.

The essential processes, or functions, of Organizational Competence are: (1) Sensing--the acquisition of information concerning critical environments, both external and internal, which are significant for the effective accomplishment of objectives; (2) Communicating information sensed; (3) Decisionmaking; (4) Stabilizing--taking action to adjust internal operations to maintain stability and functional integration within the unit; (5) Communicating (requirements for) implementation; (6) Coping actions--execution of required actions; (7) Feedback--assessing the effects of prior actions through further sensing.

The essence of Competence is quality--how well the processes are performed. Thus, Organizational Competence is the quality of performance of a unit's command and control system.

Battle staff integration should occur (1) when organizational conditions are conducive to cohesion and teamwork, and (2) if developmental activities within the unit are designed to propagate high skill levels, stable team norms, and strong values for teamwork.

Necessary Organizational Conditions include (1) a clear role system, (2) common superordinate goals, (3) a system of rewards for teamwork, and (4) a stable and efficient organizational system. Necessary Developmental Activities include (1) cognitive role training (individual), (2) battle staff experiential training (team), (3) unit operational training, and (4) shared success experiences.

Organizational conditions conducive to teamwork and cohesion are products of the organization and its leaders. When necessary developmental activities are conducted within an organizational context characterized by the above conditions, it can be expected that battle staff integration will be maximized.

D. IMPLICATIONS OF IMPLEMENTING THE MODELS

The implications of implementing Organizational Competence and Battle Staff Integration are many.

The development of Competence within a battle staff can be expected to result in (a) a more smoothly functioning command and control system; (b) adjustment of the unit to changes in the tactical environment with a minimum of error, lost motion, or wasted effort; and (c) maintenance of higher levels of unit effectiveness under the pressures of combat.

Unit effectiveness can be enhanced by improved Competence and Integration through the following:

- (1) Organizational Analyses
- (2) Organizational Design
- (3) Training and Development.

With respect to organizational analyses, the concepts subsumed under Organizational Competence offer potential for diagnosis of organizational functioning and for the correction of dysfunctional aspects.

With reference to organizational design, the way in which an organization is structured and roles are defined can have far-reaching implications for process performance. This is especially true for combined arms task forces and other task forces that may be uniquely designed for special missions or purposes.

For training and development, the central issue involves how well the processes are executed and how they are coordinated to produce integrated battle staff and organizational performance.

The development of Competence should begin with training in conceptual analyses of Competence and its components, accompanied by cognitive skill training in controlled classroom settings. Following cognitive skill training, experiential training is the technique of choice. Here, methods such as role playing and simulation can provide opportunities for personnel to vividly experience the results of their actions upon other battle staff members as well as upon the outcomes of exercises.

Implications for leaders are also addressed. Whether a battle staff will develop into an integrated team, with the Competence needed to make it effective, will depend largely on the nature of the leadership available to it. Successful leadership will develop a battle staff capable of dealing effectively with a range of operational problems and, in addition,

encourage the growth of a team that can integrate diverse elements into a unified system. In short, a principal requirement for battle staff leaders is to create organizational conditions that are conducive to effective performance.

In general, the commander's goals in developing a battle staff should be the transmission of knowledge, the inculcation of skills, and the cultivation of teamwork. This involves training battle staff members in their respective role requirements, while teaching them to concentrate on solving mutual problems rather than merely protecting private jurisdictions.

The effectiveness of a battle staff is determined by:

- (1) The skills of each member in performing, both individually and collectively, the various organizational processes dictated by operational and task demands, and
- (2) Battle staff integration--the extent to which the roles, perceptions, motivations, and activities of all battle staff members are melded into a unified whole.

The ultimate pay-off in battle staff competence, integration, and effectiveness can be achieved only through experience and practice in performing together as a team under conditions that are most conducive to learning.

It is important to note that Integration alone will not produce effectiveness. It only supports and sustains Competence, which is qualitative proficiency in the performance of critical organizational functions.

On the other hand, Competence without Integration can be a very tenuous attribute, subject to dissolution by all of the tensions and pressures that may arise from highly turbulent and stressful environmental conditions. Both Competence and Integration are essential for maximum organizational effectiveness.

E. CONCLUSIONS

A battle staff is a role system, driven and controlled by operational (task) demands and maintained by shared values and norms. The "roles" of the system are the official positions occupied by members of the battle staff, together with both the formal duties and informal expectations associated with each position. Integration is the melding of the activities of members through norms and values shared by members of the battle staff.

Battle staffs function in highly "emergent" situations of the modern battlefield. This functioning requires at least the following:

- (1) Role-Specific Individual Skills
- (2) Team Performance Skills
- (3) Integration.

Both Role-Specific Individual Skills and Team Performance Skills are trainable and are susceptible to improvement through exposure to formal individual and team training programs. On the other hand, Integration is an attribute of a team, and when present in appropriate amounts, it enhances unity within the system and focuses individual and team skills upon the task requirements of the system.

Under current world conditions, the survival of an organization whether military or civilian, requires fine sensitivity to the often subtle cues that presage change, the ability to read such cues promptly and interpret them accurately, and the capacity for rapid but efficient modification of internal operations so that new developments can be met and mastered--as they arise. Inadequacy in these capabilities can result in failure or even destruction of the organization.

I. INTRODUCTION

This paper is about organizational effectiveness and, more specifically, some important human factors that contribute significantly to the combat effectiveness of large military organizations. These particular human factors are centered in the collective and integrated judgments and actions of key unit personnel who comprise "the battle staff." The competence of a battle staff in performing its functions as a unified, integrated system can be a major determinant of combat effectiveness.

A. PURPOSE

The purposes of this paper are:

- (1) To identify certain human factors found to be critical for the effective functioning of battle staffs.
- (2) To present a sound and systematic theoretical background for understanding the functioning of battle staffs and combat organizations, and for identifying some critical organizational functions required for combat effectiveness.
- (3) To present a sound and systematic conceptual framework for understanding the integration of battle staffs.
- (4) To present conceptual models for describing, analyzing, and assessing battle staff functioning and to report the results of laboratory and field tests of the models.
- (5) To discuss implications of the test findings for the analysis and improvement of battle staff functioning.
- (6) To propose procedures for assessing battle staff functioning and for developing improved battle staffs.
- (7) To discuss implications for noncombat military units and, more generally, for civilian organizations.

B. CRITICAL ELEMENTS OF COMBAT EFFECTIVENESS

It is easy to establish an organization and it is not hard to get some performance from it. However, it is exceedingly difficult to ensure that combat units so established will

operate consistently at the peak levels of effectiveness required by present and anticipated battlefield conditions, and, above all, that they accomplish the tremendously demanding missions for which they have been constituted.

The effectiveness of a combat unit depends upon many things. Some of the more critical are:

- (1) The formal body of doctrine, policies, and procedures that have been developed to guide decisions and actions.
- (2) The adequacy of all of the variety of techniques used in the performance of combat activities (e.g., adequacy of tactics, marksmanship, use of indirect fire).
- (3) The quality of the equipment provided for use in the performance of required combat activities (e.g., weapons, vehicles).
- (4) The training and skills of all personnel.

Each of the above elements is critical for the combat effectiveness of a unit, and, if any are deficient, effectiveness will be impaired.

However, the logic of sound doctrine to guide decisions; the adequacy of policies, procedures, and techniques; the quality of equipment; and the skills of individual personnel in executing technical operations are not sufficient to meet the increasingly demanding requirements of modern warfare. *A remaining critical element involves the capability of the unit to function as a unified system in order to cope with the complex conditions of the modern battlefield.*

1. The Modern Battlefield

To be effective, every combat unit must efficiently cope with its operational environments, and with problems that arise within them. This has always been important for success in combat; however, recent developments in warfare have made control of operational environments both more essential and more difficult.

The modern battlefield is characterized by:

- (1) Extreme rapidity of critical events
- (2) High levels of turbulence
- (3) Increasingly unpredictable combat environments
- (4) Increasingly complex combat operations.

Technological advances in equipment, logistics, and communications have made it possible for critical combat events to occur with astounding rapidity. Thus, the modern battlefield is becoming increasingly turbulent and unpredictable. Moreover, the rapidity with which events may occur, coupled with the high intensity of combined arms warfare, makes modern combat operations exceedingly complex.

2. Required Capabilities

The necessity for coping with highly turbulent, complex, and unpredictable environments places a premium upon the capabilities of combat units to address and to respond flexibly to a more or less constant flow of situations characterized by high levels of uncertainty. This emphasis upon organizational responses to problem situations points up the role of military units as problem-solving, decision-making, action-taking systems in which the basic purpose is to take direct, unified action in highly turbulent and complex environments.

To be effective under such conditions, combat units must possess organizational capabilities to:

- (1) Search out, identify, and interpret the properties of operational situations *as they develop*.
- (2) Solve problems *as they occur* within the context of rapidly changing situational demands.
- (3) Generate *flexible decisions* relevant to changing situations.
- (4) Cope with *shifting situational demands* with precise appropriateness.

It is apparent that the above capabilities require a highly responsive and adaptive system of decision and action. In such a system, the means whereby information, decisions, and actions are brought into conjunction involve a complex interplay between individuals, positions, and levels. This constant interplay is a critical element in organizational responsiveness and flexibility, and, therefore, in combat effectiveness. Control and guidance of these processes is a critical function of the "battle staff" of a combat unit.

C. ESSENTIAL HUMAN FACTORS

Thus, an additional element in combat effectiveness involves competent performance by the "battle staff" of those organizational functions that are essential for the

development and integration of information, decisions, and actions, and for the coordination of these elements at many levels within the unit. In later chapters, research will be reported demonstrating the criticality of these functions for combat effectiveness and the necessity for competent performance of them by battle staffs.

It is apparent that performance of the functions is dependent upon human factors. Some technological assists can be provided--for example, highly sophisticated communications systems, and equipment for rapid compilation and processing of data. However, the payoff in effectiveness ultimately reduces to the judgments and actions of key command and control personnel, both individually and collectively. These personnel usually make up the "battle staff" of a combat unit.

Because they play such essential roles in the performance of combat units, it is important to understand clearly and as concretely as possible how battle staffs function and how to train and lead them. The general purpose of this paper is to improve such understanding through presentation of both (1) a conceptual rationale and model, and (2) practical guidance for analyzing, assessing, and developing integrated battle staffs.

D. ORGANIZATION OF THE PAPER

Chapters I and II are introductory, beginning with a description and analysis of the battle staff. The dynamic structure and functions of military organizations are discussed and the roles of battle staffs in such organizations are analyzed. Finally, some problems in battle staff functioning are explored.

Chapters III and IV are concerned with concepts that contribute to and serve as basic underpinnings for workable models of military organizations and battle staffs. Chapter III presents a brief historical review of organizational theories and conceptual backgrounds that have relevance for military organizations, with special emphasis upon Open Systems Theory and the importance of organizational process. A social-psychological concept of military organizations and battle staffs as open systems is presented. Chapter IV is concerned with theoretical background for battle staff integration. Teamwork is taken as the basic concept, and literature on teamwork and the characteristics of effective teams is reviewed.

Models for battle staff integration are presented in Chapters V and VI. Models of Competence and Integration are presented. Chapter VI is concerned with teamwork in

battle staffs and with a model for battle staff integration based upon fundamental concepts of teamwork.

Practical implications are discussed in Chapters VII through X. General implications for applying the concepts are described as well as leadership requirements for the development of competent, integrated battle staffs. Recommendations for both leading and training are included, and a special role for unit executive officers is proposed. Methods for developing improved performance of critical functions are described in Chapter IX; in addition, guidance is provided for monitoring and improving battle staff integration. Chapter X details implications for organizations other than combat units and concludes the paper.

E. MILITARY UNIT OF FOCUS

Throughout this study, the battalion or battalion-level combined arms task force is the unit upon which analyses and comments are focused. Most of the findings, implications, and conclusions may easily be applied to battle staffs in other types and levels of units.

II. THE BATTLE STAFF

In current Army nomenclature, "battle staff" is not an official designation. However, the term has entered common usage as describing, collectively, the command and control personnel of a unit. In a conventional combat unit, the "battle staff" is usually deemed to consist of (1) the unit commander, (2) the unit executive officer, (3) the principal staff officers, and (4) commanders of units at the next subordinate level. Other key personnel may be included at the discretion of the commander.

Members of the battle staff are responsible for performing all functions needed to provide direction to the unit and to maintain unit activities at high levels of effectiveness. To perform these command and control functions effectively, the battle staff must be able to identify the processes that drive the organization and must control them so that they contribute to, and do not impede, the performance of the unit.

A. THE MILITARY ORGANIZATION

Military organizations are structures intended to function effectively in emergency situations (Olmstead, Christensen, and Lackey, 1973). This is especially true for tactical units, whose typical operational conditions are characterized by intense pressures from turbulent and rapidly changing combat environments. The functions of these units are to cope with such pressures and to overcome forces in the environments that generate the pressures.

Emphasis upon organizational responses to problem situations points up the role of the organization as problem solver, decision maker, and action taker (Reitzel, 1958). Although individual members actually perform the problem-solving and decision-making activities, either singly or jointly, the necessity for global organizational responses makes it useful to conceive of the organization as a problem-solving and decision-making unit. An individual is severely limited in his capacity to deal with complex situations.

On the other hand, an organization makes it possible to analyze situations more understandably and, consequently, to develop more effective means of manipulating environments to accomplish missions.

The basic organizational technique is the following: (1) break down large problems into component parts, (2) assign responsibilities for dealing with the segments to specialized units, e.g., staff sections, and to various levels, and (3) coordinate these separate efforts in a system of organizational decision and action. Thus, the characteristic form for coping with complex problems is a controlled and directed problem-solving and decision-making system. Even though military organizations still adhere to the principle of command responsibility for decision-making, the complexity of problems and the organizational web in which the commander must operate reduce and qualify his function as a single, individual information processor and problem solver. It simply is no longer possible for a single individual to perform this function.

The major and fundamental function of a military organization is to act to achieve its objectives, or to accomplish its missions. In general, its method is to coordinate the activities of organizational members so that all shall be properly related. More specifically, the method is as follows (Reitzel, 1958):

- (1) The members of the organization are assigned specific decision-making responsibilities and action roles.
- (2) The members are trained in some respects and indoctrinated in others to perform reliably in these assigned roles.
- (3) Both decision-making and action responsibilities are distributed in terms of types of problem situations and in terms of superior and subordinate levels of authority.
- (4) Standard operating procedures, including standard formats for the communication of information, decisions, and action plans (e.g., Operations Orders), are developed; and these procedures are most rigorously enforced at the lower levels of responsibility.
- (5) The resulting structure and its standard procedures then operate on the basis of a continuous flow of situation-decision-action (Reitzel, 1958, pp. 15-16).

1. Organizational Structure

The formal distribution of problem-solving, decision-making, and action functions and the assignment of authority and responsibility to go with them define the structure of the organization. The functions are arranged and systematized on the basis of ideas as to how they should be effectively performed and logically coordinated--on the basis of what has been called "the logics of organization."

In accordance with the logics, military organizations are characterized by (1) the rational determination of missions; (2) hierarchical arrangements of personnel in terms of authority, responsibility, coordination, and control; (3) missions which require the collaboration of sub-units to accomplish; and (4) a certain degree of autonomy in matters strictly internal to the unit. Large units (e.g., battalions) are broken down into smaller components (e.g., companies), each having a fairly independent identity. The components are, in turn, usually divided into even smaller identifiable elements (e.g., platoons and squads). Thus, a military organization is laid out so as to create a precise format in which each unit is clearly charted and its missions assigned.

Usually, the product is the well-known structure which resembles a pyramid, with a single position at the top and increasing numbers of positions at each succeeding lower level. The attachment of specialized units may flatten the pyramid somewhat, and some task-force organizations may include two parallel pyramids. However, the usual structures of combat units resemble pyramids in some form.

B. FUNCTIONS OF THE BATTLE STAFF

The general functions of the battle staff are to determine the courses of action to be taken within the purview of the unit's mission, and to oversee and coordinate the activities of all personnel and subordinate units so that such activities fit together and contribute efficiently to accomplishment of the mission. More specifically, it is the responsibility of the battle staff to perform the command and control functions within and for the unit. In general, performance of command and control functions involves:

- (1) Solving problems both in terms of planning operations and of supervising activities during ongoing combat operations.
- (2) Making multitudes of decisions ranging from major tactical determinations to those required to supervise small-unit actions on a minute-to-minute basis.
- (3) Supervising the ongoing activities of the unit as a whole and of subordinate units individually. This supervision involves both monitoring activities and providing guidance and direction.
- (4) Coordinating both own and subordinates' activities so that all contribute efficiently to the unit's objectives, as well as those encompassed by the larger mission.
- (5) Coordinating the unit's activities with those of adjacent and supporting units, and with higher organizational levels, so that the unit's actions are congruent with both the larger mission and missions of adjacent units.

1. Command and Control

Military organizations are designed to operate according to a number of principles intended to maximize effectiveness through controls. They include the following:

- (1) There must be one central source of authority and decision making (Unity of Command).
- (2) There must be a clear-cut hierarchy of subordination (Chain of Command).
- (3) There must be a routinized procedure for most activities (Standardization of Operations and Functions).
- (4) Tasks and sub-tasks should be standardized and personnel should be trained for specific tasks (Specialization of Functions).
- (5) Staff positions function in advisory capacities but carry no authority for making decisions (Line and Staff Functions).

The basic purpose is to take directed, unified action in an environment that presents a continuous flow of uncertainty situations. *The principal device for maintaining control of this effort is the chain of command, which runs through the heart of the organization, from the top-most level to the lowest point of unit command.* Individuals in the chain of command, together with designated staff personnel, perform the command and control functions within combat units.

2. Organizational Process

Ideally, the process for coping with situations of uncertainty involves handling an "operational cycle" which flows up and down the chain of command and consists of Situation--Information--Decision--Action--Altered Situation--New Information--Supplementary Decision--and so on (Reitzel, 1958, p. 18). Through its command and control function, the organization seeks to regulate this cycle without becoming inflexible in its responses.

In practice, however, the "operational cycle" is not usually so straightforward as described above. For one thing, although the logical starting point for the cycle should always be a specific situation, there are in reality no concrete boundaries for many situations. Thus, situations may overlap, or one may flow into another. Furthermore, there is no specific mechanism for recognizing a situation. Sometimes information will reveal a situation. Sometimes action taken in one situation creates another situation elsewhere. One organizational level, by decision or action, frequently creates a situation for another higher or lower level. Thus, the cycle tends to operate erratically.

In addition, the process whereby information, decisions, and actions are brought into conjunction involves a complex interplay between and among levels. For example, as information flows upward in the chain of command, parts are siphoned off and bits are added. The flow of directives downward is similarly affected. At the same time, decisions and actions from intervening levels enter into the flow of information and directives.

This constant interplay that occurs is the essence of dynamic organizational process, and the extent to which a battle staff deals with it competently is a major determinant of combat effectiveness. The ability of the battle staff to control and direct the processes that drive an organization determines, in large part, the capability of the unit for coping with the pressures imposed by the combat environment.

C. PROBLEMS IN BATTLE STAFF FUNCTIONING

It is the responsibility of the battle staff to develop effective plans based upon the best information available about (1) the mission, (2) opposing forces, (3) available resources, and (4) the physical environment. It is a further responsibility to oversee implementation of the plans and to adapt their ongoing implementation to changing battlefield conditions.

Unfortunately, everything does not happen always as planned. On the battlefield, countless things can go wrong. Some problems that arise have their sources outside of the unit. Other problems develop through error or default within the battle staff. All must be met and overcome as they occur. This necessity for flexible response to changing events seems to create major difficulties for many units.

1. Some General Pitfalls

A number of years ago, Schein (1970, p. 121) set out some general problems or areas of difficulty encountered by most organizations in maintaining or improving effectiveness in response to changing environments. These have been adapted to the military context and are presented as pitfalls in battle staff functioning:

- (1) Failure to sense changes in the environment and/or incorrectly *interpreting what is happening*. This pitfall is clearly concerned with failure to obtain all relevant and current intelligence and to apply the correct meaning to the information obtained.
- (2) *Failure to communicate all relevant information to those parts of the organization which can act upon it or use it.* This pitfall refers to both the

upward and downward communication of information. No organization can adapt to changes effectively and rapidly without continuous updating of information about the ongoing situation and of operational requirements.

- (3) *Failure of the battle staff to insure that all personnel and subordinate units make the changes indicated by new information or changed plans.* As Schein (1970, p. 122) emphasized, effecting internal change in an organization requires more than merely the recognition or the announcement that such changes are necessary. A major pitfall is failure of a battle staff to oversee and verify the implementation of required changes during ongoing operations.
- (4) *Failure to consider the impact of changes upon all parts of the unit.* This refers to failure to consider the effects of operational changes upon all sub-units, especially support units. In short, focus upon maneuver units without consideration of support or adjacent units may, on occasion, lead to disaster.
- (5) *Failure to obtain information about the effects of the change.* The problem here is essentially the same as failure to sense changes in the environment. The pitfall is failure to follow-up on the effects of combat actions taken and, more seriously, failure of unit members to learn from the results so that mistakes will not be repeated and profit can be obtained from successes.

The above are common pitfalls which may occur in all types of organizations. They were presented to demonstrate that *many of the problems encountered by battle staffs are not the result of tactical errors, bad judgment, or poor execution, but, rather, their sources lie in deficient organizational functioning--in failure to adequately perform the problem-solving, decision-making, action-taking functions which are common to all organizations but which take specific form in combat units. These functions are essential for developing the unified systems necessary for coping with the severe pressures imposed by combat environments.*

2. Effects of Battlefield Pressures

A major concern in a combat unit is to develop the organization to function at peak efficiency even under extreme conditions and to guard against disruption of its critical processes by pressures generated within its environments, i.e., by opposing forces, severe weather, difficult terrain, or other adverse conditions. Disruptions of processes that are imposed by environmental pressures may initiate far-reaching consequences. In combat, they may actually determine survival of the unit.

The effects of environmental pressures are diverse and, occasionally, even contradictory (Herman, 1963). On the one hand, moderate pressure can result in closer

integration, the development of appropriate problem solutions, and the enhancement of organizational processes. On the other hand, heavy pressure may lead to disruption of critical processes, which seriously limits viability of the organization.

Research evidence detailing the effects of battlefield pressures upon the organizational functioning of combat units is sparse. Over the years, a few researchers have attacked the problem and some findings are available (Shils and Janowitz, 1948; Milner, 1957; Janowitz, 1959; Bowers, 1962; Olmstead, Christensen, and Lackey, 1973; Olmstead, Elder, and Forsyth, 1978; Olmstead and Elder, 1980). However, for the most part, reports which directly describe the effects of battlefield strains upon organizational functioning are memoirs (Halsey and Bryan, 1947; Kenney, 1949; Bradley, 1951; Truscott, 1954; Ridgway, 1956; Slim, 1961), brief analyses (Clarke, 1963; Lynn, 1963), or accounts of training experiences (Bolger, 1986). These first-hand accounts have been invaluable in providing understanding of organizational dynamics under the stress of combat.

Finally, there is a small body of literature concerned with the effects of "crises" upon the functioning of nonmilitary organizations (Williams, 1957; Herman, 1963; Drabek, 1965). A "crisis" is an event or situation which (1) threatens high-priority objectives of the organization, (2) presents a restricted amount of time in which a response can be made, and (3) is unexpected or unanticipated by the organization (Herman, 1963). Thus, a "crisis" is an emergency or extreme situation and, as such, is analogous to many of the battlefield situations experienced by combat units.

Emergency situations and the pressures generated by them mainly affect the problem-solving, decision-making, and adaptive processes discussed earlier. For example, it has been found that information about a potential threat tends to be given low value (Williams, 1957; Olmstead et al., 1973; Bolger, 1986). Organizations are frequently caught unprepared because available information from the environment is overlooked or disregarded. Furthermore, recognition of the existence of an actual emergency or problem often lags behind the occurrence of threat or even behind the impact of the emergency itself. Frequently, fragmentary and local reports are available leading up to and following actual impact; however, it is only after these reports accumulate that a recognition emerges within the organization that a crisis has occurred or that a major problem exists.

Much behavior during the immediate threat and the onset of the crisis or problem is essentially a search for information. Accordingly, the time required to define the situation

and to put responses into effect is critical. The length of time required depends, in large part, upon the communication that occurs within the organization. Yet, in many emergency situations, the total number of communication channels used for the collection and distribution of information is reduced (Janowitz, 1959; Herman, 1963; Olmstead et al., 1973; Bolger, 1986). For example, command nets are used extensively for all types of information, yet Admin-Log and Fire Control nets may be used only a little for information that would be appropriate for them. This is in contrast to the fact that there is frequently information overload (Williams, 1957; Olmstead et al., 1973; Bolger, 1986). The number of channels employed is reduced but, in those channels that remain, the quantity of information may reach overload proportions.

Frequently, the compelling pressure to act and a compressed time perspective lead to increased errors in judgment. Furthermore, the required coordination of decisions and actions frequently is not supplied in the early stages. Then, as recognition of the gravity of the crisis increases, there is usually a tendency toward centralization of decision-making responsibilities (Herman, 1963; Olmstead et al., 1973).

When a combat unit is struck with a crisis (sudden, increased battlefield pressures), the organizational processes within the unit often deteriorate or even break down completely (Olmstead et al., 1973). Under such circumstances, some units do not rapidly regain their abilities to function. For example, inadequate communication often means that a serious or large mistake or problem is required before it can be recognized by the battle staff and corrected. Because of lack of information, small mistakes or problems go unnoticed.

Finally, there frequently is a strong tendency to use stereotyped responses. The most familiar actions are those most likely to be taken, regardless of their suitability for meeting specific situational requirements.

The above examples are only a few of the ways organizational processes may break down under the stress of environmental pressures. However, the important point is that, aside from the actual destruction of units, *those aspects of an organization that are most likely to be affected by battlefield stresses are the problem-solving, decision-making, and adapting processes--those processes that most determine the ability of the unit to cope with significant events in its environments.*

3. Coping With Battlefield Pressures

Needless to say, such factors as knowledge, experience, and training will restrict the tendencies toward breakdown of organizational functioning discussed above. This is what military organizations attempt to accomplish through training, indoctrination, Standard Operating Procedures (SOPs), contingency plans, etc. There can be no doubt that the reliability thus obtained is essential to integrated effort. On the other hand, overreliance upon stereotyped responses and standardized procedures tends to limit flexibility, a quality which is also essential in turbulent and uncertain situations.

A similar paradox is found in connection with adherence to well-accepted organizational principles and practices. Thus, a series of seeming dilemmas runs through large military organizations (DA Pamphlet 600-15, 1968, p. 72):

- (1) Clear organizational lines are essential to operational effectiveness, but, if they become too fixed, they tend toward inflexibility.
- (2) Well-defined objectives increase the efficiency of the unit, but they often make it difficult to change direction easily.
- (3) Levels of authority assure an effective chain of command, but an extended hierarchy is another factor which encourages the development of inflexibility.
- (4) Clearly understood rules, methods, and standard procedures make it possible for a unit to operate consistently and with coordination, but they circumscribe subordinates' initiative as they increase in number.
- (5) The division of labor requires specialization of unit function (e.g., infantry, tanks, scouts, fire support), but specialization leads units into narrow perspectives of their responsibilities to the larger unit.

There is often a precarious balance between rigidity and flexibility in military organizations. The point at which this balance is struck can be a matter of considerable importance for effectiveness. Therefore, a major requirement in combat units is to establish and maintain a workable balance between these two aspects of the organized decision-making, problem-solving, action-taking process.

There is no question that a battle staff, operating within exacting requirements for coordination and control, must rely upon formal structures, standard procedures, and indoctrinated practices to obtain much of its results. However, there can also be no doubt that reliance solely upon such built-in controls is not sufficient to produce maximum combat effectiveness.

There is mounting evidence that maximum effectiveness can be achieved only when a battle staff addresses directly the quality of its organizational functioning and develops capabilities that will enable it to maintain functional integrity under the stress of battlefield pressures. (Olmstead et al., 1973; Olmstead et al., 1978; Olmstead and Elder, 1980). This is "Battle Staff Integration," the capability to perform critical organizational functions and to maintain unit structure and function under pressure.

The way in which an organization functions as an integrated unit is a matter for serious and careful consideration. Yet, all too frequently, such considerations are ignored in everyday training (despite heavy emphasis by the National Training Center and some schools). Reasons for this lack of attention to battle staff functioning are difficult to surmise. One possible reason may be the ubiquity of organizational processes. They are always present in organizations and their obviousness may lead to neglect. A more probable cause is the fact that organizational processes are the products of human behavior and, accordingly, are less tangible, more ambiguous, and more difficult to control than such concrete aspects of military endeavor as procedures, tactics, and use of weapons and equipment. There seems to be a tendency in military organizations to give short shrift to the less concrete aspects of combat operations. Yet, these intangible aspects may determine the difference between success and disaster.

D. SUMMARY

This report is about organizational dynamics within military combat units. Such units are complex organizations, and, like all organizations, certain functional requirements must be met before the units can be fully effective. In combat units, the organizational functions that must be performed are centered in battle staffs.

A major problem for all combat units is to develop capabilities that will enable them to maintain organizational and, hence, unit integrity under the stress of battlefield pressures. Battle staffs are the principal sources of such capabilities. The remainder of this report will be devoted to presentation of detailed analyses of concepts, research findings, and potential applications to the problems of battle staff integration and functioning.

Of course, it should be clearly understood that the various elements of a military organization--doctrine, policies and procedures; techniques of fighting; quality of equipment; training and skills of all individuals and units; and command and control, i.e., battle staff--are all equally important. Each alone is necessary but not sufficient for success in combat.

The point of this discussion and of the entire report is that a military organization is best led and directed when it is viewed as an integrated, unified system, comprised of a number of elements, each of which is important and which fit together and support each other. All should be equally proficient, through training, at their respective roles. It serves no useful purpose to give priorities in training or other activities to some elements more than others. It merely happens that this report gives special attention to battle staffs--mainly because battle staffs have not, in the past, received the attention they deserve.

III. THEORETICAL BACKGROUND

Chapters III and IV set out a theoretical frame of reference for approaching the functioning and integration of battle staffs. Chapter 3 presents organizational theories and concepts that have relevance for military organizations. An open system approach to military units is proposed as the most practicable one for understanding and improving battle staff performance.

A. THE LITERATURE ON ORGANIZATIONS

The literature on organizations is characterized by a multiplicity of viewpoints, each of which seems to possess a certain degree of legitimacy. The problem is that one phenomenon, an organization, may be approached validly from a number of different points of view. Thus, the systems developed by social scientists, business theorists, behavioral scientists, decision theorists, and operations researchers usually consist of widely different concepts and variables. Many years ago, Stogdill (1966) listed 18 separate ways of conceptualizing organizations and groups, and he said that this was not an exhaustive list. Yet, each approach has a certain relevance and each contributes to better understanding of organizations.

One major contributor to the proliferation of approaches has been a certain duality which has existed throughout much recent history of the field. This division ultimately reduces to the old question of organizational requirements versus the needs of the individual. Although Barnard (1938) emphasized early the necessity for balance between the two elements, the work of most thinkers about organizations has reflected one emphasis or the other, but rarely both. Some major writers, such as Argyris (1957) and McGregor (1967), even made this conflict the keystones of their systems. Only in recent years, have a few theorists, such as Bennis (1966), attempted to reconcile the differing viewpoints into an integrated position.

Recognition of these various approaches and of certain critical issues in organizational theory are essential to understanding the functioning of military organizations and of battle staffs. Accordingly, a brief historical analysis of the major relevant landmarks and issues in organizational theory will be presented. No attempt will

be made to present a comprehensive review of literature. Many such reviews have been published, and there is no reason for repeating them here.

Similarly, publications cited are those judged to have exerted greatest impacts upon the evolution of a valid conceptual approach to battle staff functioning. Many of these significant publications appeared one, two, or three decades ago because organizational theory was in greater ferment then. Little has appeared recently to change thinking about organizational functioning and there appears to be no reason for "reinventing the wheel" merely to demonstrate familiarity with current literature that, for the most part, has become redundant.

Accordingly, in this chapter, the major relevant theoretical positions will be summarized, a few landmarks will be reviewed, and significant considerations for understanding battle staff functioning will be discussed.

1. Structural Theories

The problem of structure is a recurring theme in organizational theory. All organizations have to provide for the meshing of members' activities. Thus, tasks must be allocated, authority (the right to make decisions) must be assigned, and functions must be coordinated. These requirements lead to development of a hierarchical framework or "structure" of the organization (see Chapter II).

The putative father of structural theory is Max Weber (1947), the German sociologist, who developed his concept of bureaucracy around the formal structure of organizations. Weber noted that, in an organization, authority is vested in positions rather than individuals and is exercised through a formal system of rules and procedures. The positions are arranged in a hierarchy with each position exercising authority over all of those below it. According to Weber, the formalism characteristic of bureaucracies minimizes variability in problem solutions and maintains high standards of internal efficiency. From this viewpoint, "an organization is a social device for efficiently accomplishing through group means some stated purpose; it is the equivalent of the blueprint for the design of the machine which is created for some practical purpose" (Katz and Kahn, 1966, p. 16).

Weber wrote on bureaucracy around the turn of the century. Until recently, most structural theorists followed Weber in stressing the rational aspects of organizations. Most concerned themselves with deriving more and more ideal structures and with analyzing

how such factors as objectives, size, geographical dispersion, and techniques of operation influence the shapes of hierarchical frameworks. Because scientists do not often get opportunities to manipulate the structures of existing organizations, much of this work was descriptive.

Most of the earlier theorists were concerned with increasing effectiveness through improved structural designs. However, in recent years, more attention has been given to the ways attitudes, values, and informal goals develop within subordinate units despite structural controls, and to the ways these "unintended consequences" can actually modify an organization's structure. This new emphasis began with Merton (1940) and continued with Dubin (1949) and Selznick (1957). As an example, Selznick demonstrated in a study of the Tennessee Valley Authority that Weber's description of a formal bureaucracy left out the problems that occur when organizational leaders delegate some of their authority, which inevitably they must. Delegation increases unit specialization and, thus, emphasizes conflicts of interest between units and the organization as a whole. Such conflicts hamper the effectiveness anticipated when ideal structures are designed.

These more recent developments have expanded the perspectives of structural theorists. Although there has remained a vigorous concern with organizational design (Thompson, 1966)--with linkages, levels, and bonds of organization (Haire, 1959; Marshak, 1959)--most modern-day theorists (Selznick, 1957; Dubin, 1959; Rapaport, 1959) have attempted to bring internal processes of some sort into their systems. Primary emphasis remains upon structure but there is now recognition that disregard of human variability may have seriously disruptive effects upon an ideally designed organization.

Structural theory has numerous critics. In particular, the older theories of bureaucracy have been attacked from many sides. According to Bennis (1966, p. 5),

Almost everybody, including many students of organizational behavior, approaches bureaucracy with a chip on his shoulder. It has been criticized for its confusion and contradictions, for moral and ethical reasons, on practical grounds such as its inefficiency, for its methodological weaknesses, and for containing too many implicit values or for containing too few.

Some criticisms appear to be more valid than others. However, several limitations of structural theory are readily apparent and have particular relevance for this discussion.

The first major limitation is that structural theories usually focus upon the anatomy of organizations rather than upon their behavior. There can be no doubt that a knowledge

of anatomy is important for understanding any organism; however, it is only a small part of the story. When viewed solely from the standpoint of structure, the greater portion of the organization is never seen.

This limitation would not be so critical if theoretical understanding were the only consideration. The trouble is that structural approaches have held predominance for so long and they offer such easy answers that many practitioners--managers, military commanders, administrators--look to organizational design as the solution to problems whose sources often lie elsewhere. When difficulties arise within an organization, the most obvious solution is to redesign a job, change the authority structure, modify the span of control, when, in fact, these aspects may be only tangentially relevant to the real problems.

A second limitation is that structural theories most frequently are concerned with derivation of ideal structures rather than with the design of real-life organizations. While ideal structures contribute to thinking about real organizations, many such analyses are simply irrelevant to practical situations.

A final limitation is that most structural approaches ignore the effects that the personalities and capabilities of members may exert upon the shape of an organization. A strong leader or team of leaders may exercise dramatic modifications upon the allocation of responsibility and authority. In a similar way, single positions or entire structures are sometimes modified to fit the competencies or limitations of incumbents. Structural approaches rarely take such things into account.

Despite these limitations, structural theories make valuable contributions to knowledge of organizational behavior. For example, an understanding of the way such elements as missions, objectives, size, and techniques of operation determine optimum structure is critical for efficient functioning, strength allocations, and organizations, etc. Furthermore, the question of structure, of the linkage between positions, is closely associated with problems of information processing and decision making. The number of links in a system and the concomitant allocations of authority may have serious consequences for communication load and vulnerability to information loss. It is clear that structural concepts, when viewed in the proper perspective, have a place in a systematic theory of organizational functioning.

2. Group Theories

Weber himself eventually got around to expressing fear that the bureaucratic way of life tends to smother individual potentialities. He was the forerunner of a large number of writers who sounded the alarm against the practicing bureaucracy. Indeed, Bennis (1966) in a discussion of "the decline of bureaucracy," stated:

... it would be fair to say that a great deal of the work on organizational behavior over the past two decades has been a footnote to the bureaucratic "backlash" which aroused Weber's passion: saving mankind's soul "from the supreme mastery of the bureaucratic way of life."

Bennis went on to conclude that very few recent writers have been indifferent to the fact that bureaucracy is "a social instrument in the service of repression," treating man's ego and social needs as a constant or as nonexistent or inert. Bennis contended that "these confined and constricted needs" insinuate themselves into the social processes of organizations in unintended ways (1966, p. 7).

Bennis probably overstated the case when he envisioned a concerted movement to save "mankind's soul from the supreme mastery of a bureaucratic way of life." Certainly, however, there has been a continuing flurry of writings concerned with the inhibiting effects of organizational life. These will be discussed in the section on "individual" theories. However, the earliest, and still continuing, attack came not so much from a concern for the repressive effects of organizations as from discovery of a basic fallacy in classical structural theory. This fallacy was that structural theory fails to recognize the effects of informal groups upon motivation, behavior, and performance in organizations.

Group theories of organization stem from two unrelated sources. The first was work begun by Elton Mayo (1933) at the Hawthorne plant of Western Electric and continued by Roethlisberger and Dickson (1939). These researchers "discovered" the influence of the face-to-face informal group upon motivation and behavior in a work situation. However, for them, there was no essential conflict between man and the organization. Rather, satisfying workers' social and psychological needs is congruent with the organization's goals of effectiveness and productivity.

Directly descending from Mayo were Whyte (1959; 1961), Homans (1950), and Zaleznick (1964). Working with data drawn from business organizations (usually obtained by intensive case study of a single firm), these theorists developed such findings as the following: The output of a worker is determined as much by his social relations as by his abilities and skills; noneconomic rewards are extremely important in the motivation and

satisfaction of personnel; group-held norms and attitudes play a major role in an individual's evaluation of his work situation; and informal leaders may develop who possess more actual power than appointed supervisors.

The second source of group theories was the work of Kurt Lewin (1947), who stressed the importance of group forces in influencing and motivating people. Following Lewin, there appeared a long series, of which the most notable for this report are the leadership studies of Lewin, Lippitt, and White (1939), the participation studies of Coch and French (1948), and the work on morale and productivity by Katz and Kahn (1952).

The work of Lewin's successors reached a landmark with the publication of Likert's *New Patterns of Management* (1961). In this book, Likert proposed a "modified" theory of management in which he stressed the importance of group forces in worker motivation, the necessity for managers and supervisors to serve as "linking pins" between the various groups and levels within an organization, and the essentiality but relative independence of both productivity and morale.

Although the lineal descendents of Mayo and Lewin have remained apart in their general approaches, many common elements can be identified. In both approaches, the principal emphasis was changed from Weber's rational bureaucracy to an organizational model which took account of "unanticipated consequences," i.e., feelings, attitudes, norms, sentiments, and perceptions. Thus, the behavior of an organization was viewed as less mechanistic but also more unpredictable.

The acceptance of social relationships as a major variable in organizational behavior was a significant development in the theory of organizations. The strong reaction of group theorists to the older rational models was highly valuable in calling attention to a hitherto ignored facet in organizational functioning--the influence of informal groups. On the other hand, the aversion of group theorists, especially the Lewinians, to anything resembling hierarchical control within organizations has been something of a limitation. So far, attempts to relate group behavior to organizational functioning in systematic ways have been limited. Likert came closest, but his concepts became rather pallid when he discussed groups in relation to hierarchical levels. Likert (1967) eventually moved into a fourfold typology of organizations based upon eight dimensions. He concluded from extensive research that more successful organizations tend toward "System Four" management. System Four organizations are characterized by a supportive climate, group decision making, considerable self-control, and high performance goals. The major variables

appear to be the nature of the management climate (directive versus supportive) and the individual versus group orientation of the organizational structure. Likert, of course, advocated an overlapping group structure, which is his well-known "linking pin" concept.

Many group theorists have been reluctant to give full weight to formal authority relationships. In fact, this reluctance has been so pronounced that Cartwright (1959), one of the more imminent group theorists, accused group psychology of being "soft on power." Especially for groups within hierarchical organizations, power is a critical variable. Because organizations are structured on the basis of authority relationships, groups within organizations are different from those outside and the two can never be the same. This fact can never be ignored in any consideration of organizational functioning.

3. Individual Theories

The rubric *Individual Theories* embraces for convenience two approaches that are only remotely related. On the one hand, a rather large group of empirical researchers and a smaller number of theorists are concerned with psychological factors that affect the performance of individuals within organizations. On the other hand, a small but increasing number of writers, in violent reaction against rational, structural theories and the practices based upon them, have emphasized the conflict between organizational requirements and needs of the individual. Both approaches are concerned with the performance of individuals. However, the first approach addresses itself to improving performance through better selection, classification, training, and leadership. The second approach starts with the notion of a basic incompatibility between organization and individual and then attempts to modify organizations and their practices in ways intended to permit greater opportunities for need satisfaction by personnel.

a. Fitting Man to the Organization

The first approach centers around those activities commonly considered to be within the purview of traditional "Industrial Psychology." Stemming from a long and respectable history of applied work, there has developed a considerable body of studies concerned with such concrete problems as selection, training, conditions of work, methods of payment, incentives, human engineering, etc. In these areas, a genuine contribution has been made in fitting the man with the job. Until fairly recently, the contribution has been mainly in

terms of methods. Most work has relied upon analyses of single problems in unique situations rather than systematic studies of generalized phenomena.

This limitation has subjected individual theorists to criticism by a number of writers who desire a more systematic understanding of the problems studied. For example, in a significant publication, Pugh (1966) contended that all of the studies on industrial selection have "contributed little more to the understanding of human behavior than a series of (usually modest) validity coefficients." Pugh credited the individual theorists for being the only ones who have tackled the problem of the validity of data but he also contended that their emphasis upon a "factorial-statistical" approach has usually resulted in a theoretically arid formulation.

Perhaps a more serious limitation of the traditional individual approach is that many attempts to improve performance of individuals do not take the organizational context into full account. Personnel selection again provides an illustration. Selection procedures are desired so that an organization can be composed of the most adequate individuals. Yet, even though the adequacy of each individual can be important, the operational processes characteristic of the particular organization and the ways members' activities are integrated and coordinated can be equally critical.

Recently, this traditional approach to individual effectiveness appears to have been embarking on a new stage of development. Over the past two decades, there has developed a growing body of data concerned with motivation and its more complex relationships with performance.

Of course, motivation has been recognized in industrial psychology for a long time. However, it is only recently that psychologists have begun to produce genuinely sophisticated studies and theories concerned specifically with the composition of those motives most relevant to performance within the organization (Geilerman, 1963). Outstanding among these theorists has been Maslow (1954, 1970), whose approach to human motivation has been widely accepted because his needs-hierarchy theory has considerable explanatory power with respect to human motivational behavior and personal satisfaction in organizational settings.

The relationship between job satisfaction and productivity has been a big issue for a long time. Originally, it was assumed that satisfaction and performance must be highly related. Then, it was shown that job satisfaction and productivity are not necessarily complementary (Brayfield and Crockett, 1955; Kahn, 1960). This was puzzling for a

while until Herzberg, Mausner, and Snyderman (1959) demonstrated that job satisfaction itself is not a unitary concept and that certain conditions at work only prevent losses in morale but do not push toward greater motivation, while others exert strong uplifting effects upon attitudes or performance. Although Herzberg later endured some strong criticism on methodological grounds, his theory was well received among organizational practitioners because, like Maslow's approach, it makes sense.

Finally, Porter and Lawler (1968) derived a remarkably elegant model of human occupational motivation based on expectancy theory. These writers and an extensive list of researchers who have followed them have developed and refined a model which is noteworthy for its parsimonious, yet comprehensive, consideration of moderator variables mediating motivation, performance, and satisfaction and the relationships between them.

These developments in the study of motivation also offer promise for improved understanding of organizational behavior. Although still concerned with the effects of motivation upon the performance of individuals, most present-day theorists give full recognition to the influence of organizational conditions upon motivation and, more important, to the effects of social motivation upon group and organizational performance.

At this point, it is important to note that recognition of the essentiality of motivation to performance came relatively late (Mayo, 1933, and the Individual Theorists after World War II). In the early stages, the fact that motivation is an attribute of individuals was taken to indicate a more or less permanent state within a person. A person was believed to be highly motivated to work--to perform--or he was not. The idea was to select individuals who are highly motivated.

The value of the motivation theories of Maslow, Herzberg, and Porter and Lawler lies in the full recognition that, although motivation is an attribute of the individual, the motivational state of any one person is not a constant. Within limits, motivational states vary according to what happens to the individual, how he perceives his situation, and his expectations about what is happening to him.

For individuals within organizations, much that happens is determined by the organization. Thus, elements in the organizational environments are major determinants of the motivational states of members.

The importance of this fact lies in the shift from the notion that the individual is solely responsible for his motivational level to recognition that conditions within the

organization are major determinants. Therefore, a principal part of the responsibility for the motivation of personnel lies with those persons who are charged with control over organizational conditions, i.e., with the management or leadership of the organization.

b. Fitting the Organization to Man

Whereas the just described approach has focused mainly upon fitting man to the organization, another approach is more concerned with fitting the organization to man. In one way or another, theorists of the second approach see the basic problem as a conflict between the psychological needs of individuals and the formal requirements of organizations as put forth by the structural theorists.

By far the most clear in his conceptualizations was Argyris (1957, 1962), who built a complete system around the notion of the basic incompatibility of the individual and the organization. According to Argyris, this incompatibility results in frustration which can be inferred from "pathological behaviors" and "defense mechanisms" exhibited by many individuals employed in organizations. In his earlier work (1957), Argyris was mainly concerned with effects upon lower level personnel and his solutions involved restructuring organizations toward greater decentralization and enlarging jobs so that "self-actualization" would have more chance to bloom. In later work (1962), Argyris addressed himself to the problems of executives and he advocated modification of impersonal value systems in organizations and the development of "authentic" relationships.

Although he started from a somewhat different initial position, McGregor (1960, 1967) based his analysis upon the same essential conflict as Argyris. McGregor began with recognition that "if there is a single assumption which permeates conventional organizational theory, it is that authority is the central, indispensable means for managerial control" (1960, p. 18). McGregor then proceeded to his now-famous comparison between "Theory X" and "Theory Y". He attempted to show the limitations of authority based on role or status (Theory X) as compared with authority based on objectives, i.e., task or goal requirements (Theory Y). McGregor stressed the integration of task requirements with needs of the individual. However, where Argyris advocated restructuring job and organization, McGregor recognized that leadership is the means whereby the needs of the individual and the requirements of the organization can be reconciled. For him, leadership was "the creation of conditions such that members of the organization can achieve their goals best by directing their efforts toward the success of the enterprise" (1960, p. 49).

About the same time, several other writers (Blake and Mouton, 1964; Shepard, 1965) were stressing the importance of organizational leadership as the main integrating factor. In their views, if leaders see their organizations as organic rather than mechanistic--as adaptable rather than controlled by rigid structure--emphasis within the organizations will shift from arbitration to problem solving, from delegated to shared responsibility, and from centralized to decentralized authority. Thus, the needs of the individual and requirements of organizations will be reconciled.

This second approach of the Individual Theorists is important because it forces attention to internal processes in organizations and the way human components affect them. Effectiveness within an organization requires trading and negotiation by all participants. The extent to which problems are solved and objectives are accomplished is strongly determined by the degree of accommodation that can be achieved.

As a final point, it should be noted that all of the approaches mentioned in connection with both group and individual theories tend to emphasize interpersonal and group factors as causal elements in organizational effectiveness. They tend to ignore or, at least, de-emphasize the cognitive processes of problem solving as equally important determinants.

4. Decision Theories

Whereas group and individual theorists have tended to play down cognitive processes, other writers have focused squarely upon problem solving and decision making as controlling factors in organizational effectiveness. Although the study of decision making, particularly that performed by individuals, is a relatively independent area, it has made a significant contribution to the understanding of organizations.

Theories of organizational decision making have their origin in economic theories of consumers' choice (Edwards, 1954). Classical economic theory started from an assumption that man is entirely rational in his choices. Economic man was presumed to be completely informed, infinitely sensitive, and totally rational. In his decisions, not only were the alternatives in the choice known, but also each alternative was known to lead to a specific outcome. Thus, classical economic theory was essentially one of decision under conditions of absolute certainty (Taylor, 1965).

Classical theory has undergone numerous modifications, the most notable of which occurred with the advent of game theory (von Neuman and Morgenstern, 1944). Game

theory recognized the concept of decision under uncertainty or risk; however, it still rested upon the assumption of rationality. Furthermore, game theory remained a theory of decision making by individuals.

A decision made by an individual in isolation is one thing, but that made by him in an organization is another. In the latter case, the considerations to be taken into account become much more complex. A landmark in the development of theories of decision making in organizations was Simon's book, *Administrative Behavior: A Study of Decision-Making Processes in Administrative Organization* (1947). Simon retained the idea that decision behavior within organizations is "intendedly rational" and that decisions are made by individuals within organizations and not by organizations as entities. However, he also recognized the inadequacy of classical economic theory for understanding behavior within organizations. Accordingly, he distinguished between the role of facts and of values in decision making. Questions of value are questions of what *ought* to be. Simon contended that decision makers employ values as well as facts in making choices. Limits upon rationality in decision making are imposed by lack of all the possible facts. Therefore, in Simon's view (1957a, p. 204), the decision maker must "satisfice"--find a course of action that is "good enough"--rather than maximizing returns, as would be possible if he had full knowledge of the consequences attached to every alternative. Simple as it may sound, Simon's concept of "satisficing" opened totally new vistas in theories of organizational decision making.

The contrast between economic man and Simon's administrative man emphasizes an important point. Rationality is central to behavior within an organization. However, if the members of an organization were individuals capable of the kind of objective rationality attributed to classical economic man, theories of organization would have no purpose. In Simon's words:

... if there were no limits to human rationality, administrative theory would be barren. It would consist of the single concept; always select that alternative, among those available, which will lead to the most complete achievement of your goals. (1957b)

Then, Simon went on to contend that the need for an administrative theory resides in the fact that there *are* practical limits to human rationality, and that these limits are not static, but depend upon the organizational environment in which the individual's decision takes place. The task of administration (organizational leaders) is to so "design" the

environment that the individual will approach as close as practicable to rationality (judged in terms of the organization's goals) in his decisions.

The most significant point in the above statement is that decisions are influenced by the organizational environment. Internal relationships and operational processes can and do exert critical effects upon the nature and quality of decisions. Thus, decisions can never be completely rational. This theme was expanded into a full theory of organization by March and Simon (1958).

In the classical economic theories and Simon's administrative theories, the decision maker is the individual. On the other hand, Cyert and March (1964) formulated a theory of the organization as decision maker. They built upon the classical model of rational behavior; however, they recognized an important fact. Organizations are constantly attempting to adapt to their external and internal environments and fully rational adaptation is constrained by some fairly strong limits on the cognitive capacity, the computational speed, and the internal goal consistency of the organizations.

To describe how organizations cope with these constraints, Cyert and March posited four critical modifications to the classical axioms of rationality:

- (1) Quasi-resolution of Conflict--organizations do not have a simple preference ordering of goals. Instead, they exist with considerable conflicts of interest which are resolved either through compromise or sequential attention to goals.
- (2) Uncertainty Avoidance--organizations tend to avoid uncertainty rather than deal with it by calculations of expected returns as in economic theory.
- (3) Problemistic Search--decisions to search for solutions are dictated by the existence of problems rather than calculations of expected returns.
- (4) Organizational Learning--organizations learn from their experiences and modify procedures over time.

The notion that numbers of people make decisions as a unit was not a new idea in group dynamics. However, in decision theory, it is a relatively recent concept. When the temptation to anthropomorphize can be resisted, when it can be recognized that what is involved is a number of individuals arriving at decisions jointly, the concept of organizational decision making provides possibilities for promising insights into some of the more complex aspects of organizational behavior. For example, the four modifications described in the discussion of Cyert and March open the door to the analysis of organizations in terms of ongoing processes. Where previous theories viewed decision

making in terms of essentially static models, Cyert and March saw it as a dynamic process occurring in response to continuous changes in the environment and constantly modified on the basis of new information. Thus, decision making is viewed as an adaptive response of the organization.

The importance of viewing decision making in terms of organizational processes cannot be overemphasized. Even today, much current research and theory ignores the circumstances under which the decision is made and under which the decision maker is acting (Hayes-Roth and Hayes-Roth, 1979; Hunt, 1980). Much of the work in the field makes it appear that the specific act of choosing among alternatives is the core of the decision-making process and that prior or subsequent events need not be considered. Yet, in real organizations, the events leading to the act of choice and those following are often the more critical ones. Frequently, the outcome is foreordained by the time the act of choice is reached and, often, decisions are not implemented as intended. It begins to become clear that decision making cannot be separated from other organizational processes.

One final point remains with regard to decision theories. Just as group and individual theories overstress interpersonal and motivational factors, decision theories place primary emphasis upon rational aspects of cognition and perception. Accordingly, like the group and individual approaches, decision theories offer only partial explanations of the complex phenomena encountered in organizations.

B. THE ISSUES AND A RESOLUTION

The effort to formulate a general theory of organization has not as yet been outstandingly successful in producing firm and significant explanations regarding how and why some organizations are effective and others are not. For military organizations, the effort has been even less productive, mainly because very little attention has been given to it.

Probably the most significant reason for the lack of progress is that, until recently, theorists and researchers have concerned themselves with relatively small and often unrelated segments of the overall problems. This was suggested by March and Simon (1958) many years ago when they pointed out that most propositions about organizational behavior can be grouped in three broad classes.

1. Propositions assuming that organization members, and particularly employees, are primarily *passive instruments*, capable of performing work and accepting

directions, but not initiating action or work or exerting influence in any significant way.

2. Propositions assuming that members bring to their organizations *attitudes, values, and goals*; that they have to be motivated or induced to participate in the system of organization behavior; that there is incomplete parallelism between their personal goals and organization goals; and that actual or potential goal conflicts are important in the explanation of organizational behavior.
3. Propositions assuming that organization members are *decision makers and problem solvers*, and that perception and thought processes are central to the explanation of behavior in organizations.

After 30 years, the above analysis still holds. It should be noted that Category 1 encompasses the bureaucratic theories, as well as the many other theories and propositions concerned with structures, procedures, policies, and other formal aspects of organizations. Category 2 summarizes a large number of studies in psychology and sociology that have stressed the nonrational forces at work in organizations committed to operating on the basis of rationality and discipline, to include the group and individual theories discussed earlier. Category 3 includes decision theories and covers those studies devoted to the analysis of strategies and choice.

As March and Simon made clear, there is nothing contradictory about these three sets of propositions. Organizations involve all of these things. However, this is precisely the problem with most organizational theories. Whereas an adequate understanding of organizational behavior will have to take account of the instrumental (bureaucratic) aspects, the motivational and attitudinal aspects, and the rational aspects, most researchers and theorists have focused on only those partial elements that seemed particularly significant for their interests. The result has been, to say the least, an imperfect picture of organizational behavior.

More recently, several researchers (Burns and Stalker, 1961; Lawrence and Lorsch, 1967; Dalton, Lawrence, and Lorsch, 1970) began to examine design aspects of organizations in relation to the kinds of technology used and the functions served by various organizational divisions. Schein (1970) termed these researchers "Neostructuralists." In brief, the approaches of the Neostructuralists are important because they recognize that, for an organization to function effectively, both structure and functional behavior requirements must be considered.

These conclusions suggest that current ways of thinking about organizations may be seriously inadequate. Bennis made the same point when he concluded:

It is no longer adequate to perceive an organization as an analog to the machine as Max Weber indicated Nor is it reasonable to view the organization solely in terms of the socio-psychological characteristics of the persons involved at work, a viewpoint that has been so fashionable of late. Rather, the approach that should be taken is that . . . organizations are to be viewed as "open systems" defined by their primary task or mission and encountering boundary conditions that are rapidly changing their characteristics. (1966, p. 46)

Bennis went on to contend that, "The main challenge confronting today's organization . . . is that of responding to changing conditions and adapting to external stress" (1966, p. 44).

Bennis has been the most articulate critic of the more customary ways of thinking about organizations. He contended that the traditional approaches are "out of joint" with the emerging view of organizations as adaptive problem-solving systems and that conventional criteria of effectiveness are not sensitive to the critical needs of the organization to cope with external stress and change (1966, pp. 34-63). According to Bennis, conventional methods of evaluating effectiveness provide static indicators of certain output characteristics (performance and satisfaction) without revealing the processes by which the organization searches for, adapts to, and solves its changing problems. Yet, without understanding of these dynamic processes of problem solving, knowledge about organizational behavior is woefully inadequate. He concluded, ". . . the methodological rules by which the organization approaches its task and 'exchanges with its environments' are critical determinants of organizational effectiveness" (1966, p. 47).

Bennis proposed that the major concern should be with "organizational health," defined in terms of "competence," "mastery," and "problem-solving ability," rather than "effectiveness," if "effectiveness" is considered in terms solely of final outputs. He then postulated some criteria for organizational health (1966, pp. 52-54).

- (1) Adaptability--which coincides with problem-solving ability, which in turn depends upon flexibility of the organization. Flexibility is the freedom to learn through experience, to change with changing internal and external circumstances.
- (2) Identity--Adaptability requires that an organization "know who it is, and what it is to do." It needs some clearly defined identity. Bennis says that identity can be examined in two ways: (1) by determining to what extent the

organizational goals are understood and accepted by the personnel, and (2) by ascertaining to what extent the organization is perceived veridically by the personnel.

- (3) Reality-Testing--the organization must develop adequate techniques for determining the "real properties" of the environment in which it exists. The "psychological field" of the organization contains two main boundaries, the internal organization and the boundaries with the external environment. Accurate sensing of the field is essential before adaptation can occur.

Thus, Bennis viewed an organization as an adaptive organism and he contended that the processes through which adaptation occurs are the proper focus of analysis. When the processes are understood, greater potential exists for improvement of organizational performance.

A few other writers have recognized the potentiality of studying the problem-solving processes used by an organization. For one, Altman stated:

Performance effectiveness should be viewed from a much larger perspective, to include so-called "process variables" as intrinsic antecedents of performance outputs. Thus, we reject the approach to small group performance [or organizational performance] solely from a "black box" point of view, but propose instead a strategy that peers into the box and attempts to understand the sequential development of performance as it progresses from input to output. (1966, p. 84)

1. General Systems Theory

In their search for a conceptual framework which will encompass the many varied aspects of organizations, Bennis (1966), Schein (1965, 1970), Katz and Kahn (1966), and a number of other writers turned to General Systems Theory (von Bertalanffy, 1956). In Systems Theory, an organization is viewed as existing in an environment with which there are more or less continuous interchanges. As a system, the organization is regarded as having inputs (resources such as material, people, and information) on which it operates a conversion process (throughput) to produce outputs (products, services, actions, etc.). Both the inputs and outputs must take account of environmental changes and demands (Emery and Trist, 1965).

According to Systems Theory, the organization simultaneously engages in two general kinds of processes: (1) those concerned with adaptation to the environment; (2) those concerned with internal development and execution. Thus, it uses its internal

processes and energies to continually react to changes in its environment in order to maintain equilibrium with it.

Of particular interest to organization theorists is the concept of "equifinality." According to this principle, a system can reach the same final state from different initial conditions and by a variety of paths (Katz and Kahn, 1966, pp. 25-26). It has special significance for organizations because it points up the importance of ongoing processes adapted from specific situations as major determinants of outcomes. Whereas bureaucratic theories rely upon rules, policies, and precedents to dictate action, and theories of decision rely on rationality to indicate the obvious solution, Systems Theory recognizes that actions are governed by dynamic processes through which problems are approached as they arise and in accordance with their particular nature.

One of the most fully developed approaches is that of Parsons (1960). According to Parsons, all organizations must solve four basic problems:

- (1) Adaptation: the accommodation of the system to the reality demands of the environment and the actual modification of the external situation. Each organization must have structures and processes that will enable it to adapt to its environment and mobilize the necessary resources to overcome changes in the environment.
- (2) Goal achievement: the defining of objectives and the attaining of them. Processes are required for implementing goals, to include methods for specifying objectives, mobilizing resources, etc.
- (3) Integration: establishing and developing a structure of relationships among the members that will unify them and integrate their actions. The organization must develop processes aimed at commanding the loyalties of the members, motivating them, and coordinating their efforts.
- (4) Latency: maintenance of the organization's motivational and normative patterns over time. Consensus must be promoted on values that define and legitimize the organization's goals and performance standards. (In military units, this includes cohesiveness, discipline, morale, and *esprit de corps*.)

Parsons applied his theory to all types of social phenomena. Probably because of his interest in a theory of general social systems, he painted his analysis of formal organizations with a fairly broad brush (Parsons, 1956). However, Katz and Kahn (1966) built upon Parsons' work, together with that of Allport (1962) and Miller (1955), to develop a comprehensive, wide-ranging theory of organizations which is solidly within the Systems Theory framework. Katz and Kahn attempted nothing more than a complete

explanation of organizational behavior with Systems Theory concepts. Although certain aspects of organizations require a little forcing to fit systems concepts, the attempt was reasonably successful in putting into proper perspective such ideas as interchange with environments, operation by process instead of procedure, and the interrelationships among functional units.

Systems Theory embraces a much more comprehensive set of concepts than is possible to describe here. An outline provided by Schein (1965) will serve to summarize those ideas which have the most relevance for this discussion:

- (1) . . . the organization must be conceived of as an open system, which means that it is in constant interaction, taking in raw materials, people, energy, and information, and transforming or converting these into products and services which are exported into the environment.
- (2) . . . the organization must be conceived of as a system with multiple purposes or functions which involve multiple interactions between the organization and its environment. Many of the activities of subsystems within the organization cannot be understood without considering these multiple interactions and functions.
- (3) . . . the organization consists of many subsystems which are in dynamic interaction with one another. Instead of analyzing organizational phenomena in terms of individual behavior, it is becoming increasingly important to analyze the behavior of such subsystems, whether they be conceived in terms of groups, roles, or some other concept.
- (4) . . . because the subsystems are mutually dependent, changes in one subsystem are likely to affect the behavior of the other subsystems.
- (5) . . . the organization exists in a dynamic environment which consists of other systems, some larger, some smaller than the organization. The environment places demands upon and constrains the organization in various ways. The total functioning of the organization cannot be understood, therefore, without explicit consideration of these environmental demands and constraints.
- (6) . . . the multiple links between the organization and the environment make it difficult to specify clearly the boundaries of any given organization. Ultimately, a concept of organization is perhaps better given in terms of stable processes of import, conversion, and export, rather than characteristics such as size, shape, function, or structure.

The swing to a system emphasis by such respected theorists as Bennis, Katz and Kahn, Parsons, Schein, and Selznick signaled a significant new development in ways of thinking about organizations. Where, previously, attention was mainly focused upon the

invariant aspects of organizations--the unchanging aspects of procedures, policies, structures, and role relationships--there was now recognition that the variant aspects may be the real key to understanding organizational behavior and controlling it.

C. ORGANIZATIONAL PROCESSES

Thus, it became apparent finally that it is plainly necessary to focus upon the dynamics of organizations. Since an organization is an adaptive, equilibrium-seeking, open system, the processes through which adaptation occurs are significant subjects for attention. Processes are those activities performed by an individual, group, or organization over time to solve a problem or perform a task (Steiner, 1972). Process is the series of actions, each of which is determined by those occurring previously and which determines those that follow.

With respect to military organizations, the main challenge confronting them on the battlefield is that of coping with external stress and continually changing conditions. When combat units are considered "open systems"--adaptive structures coping with various environments--the most significant attribute for understanding effectiveness (mission accomplishment) is competence, or mastery over the environment. If this view is valid, then the critical factor in understanding and improving effectiveness is the methodological rules, or processes, by which the organization approaches its task and interacts with its environments.

Schein (1965, pp. 98-99) has suggested an actual sequence of activities, or processes, used by organizations in adapting to changes in environments. Schein called this sequence an "adaptive-coping cycle." The stages of the adaptive-coping cycle are as follows:

1. Sensing a change in the internal or external environment.
2. Importing the relevant information about the change into those parts of the organization which can act upon it.
3. Changing production or conversion processes inside the organization according to the information obtained.
4. Stabilizing internal changes while reducing or managing undesired by-products (undesired changes in related systems which have resulted from the desired changes).
5. Exporting new products, services, and so on, which are more in line with the originally perceived change in the environment.

6. Obtaining feedback on the success of the change through further sensing of the state of the external environment and the degree of integration of the internal environment.

As will be demonstrated in later chapters, Schein's adaptive-coping cycle makes it possible to identify and isolate those processes where performance may be inadequate. In addition, the relative contribution of each process to over-all effectiveness may be specified accurately.

It is important, therefore, to understand precisely how these processes affect and contribute to organizational effectiveness. It is equally important to understand what factors influence functioning of the organizational processes in battle staffs and, in a particular unit, what determines whether the processes can resist disruption under pressures arising from its environments. With such understanding, it will be possible to know how to assess battle staff performance and how to improve performance in this critical area.

II. TEAMWORK IN BATTLE STAFFS

Based on the foregoing analysis of the literature, it was concluded that military organizations can be understood best as problem-solving, decision-making, action-taking, open systems that operate in complex environments characterized by high levels of uncertainty. It was further concluded that the effectiveness of combat units depends, in large part, upon the extent to which certain organizational processes are performed competently by members of the battle staff. There is strong evidence (see Chapter V) that these critical organizational processes are major determinants of combat effectiveness.

Furthermore, evidence will be presented to the effect that battlefield stresses can impact seriously upon the performance of organizational processes. In Chapter II, it was shown that those aspects of an organization most likely to be affected by combat pressures are the problem-solving, decision-making, and adapting processes--those processes that most determine the ability of an organization to cope with events in its environments.

Two significant questions are: "What determines the quality of battle staff performance of critical organizational processes?" and "Why, under equal stresses of combat pressures, do these critical organizational processes deteriorate in some units and not in others?" These questions are practical ones and the problems they pose are subject to solution through sound, theory-backed, empirical research. Unfortunately, no such research has yet addressed the questions directly.

For this reason, it will be important to examine relevant literature and to develop a conceptual framework that can serve as both (1) a solid ground for the development of effective battle staffs, and (2) a sound basis for the design of meaningful empirical research.

A. THE BATTLE STAFF AS TEAM

The literature on teams and team performance is a morass of claims and counterclaims, conceptual confusions, and aborted attempts to bridge the gap between scientific analysis and real-world application. Fortunately, there have been published recently a number of excellent analytic reviews (Dyer, 1985; Hall and Rizzo, 1975; Knerr,

Berger, and Popelka, 1979; Knerr, Nadler, and Berger, 1980; Nieva, Fleishman, and Rieck, 1978; Parsons, 1972; Thorndyke and Weiner, 1980; Wagner, Hibbitts, Rosenblatt, and Schultz, 1977). Taken together, these reviews have defined the field and its issues reasonably well.

On the other hand, even though the issues have now been well-defined, many of the practical problems raised by them remain cloudy. Whereas teams and the elements of team performance are better understood, the practical application of this knowledge to the problems of team development and team management and control remains in a relatively unsystematic state.

There can be little doubt that it is extremely difficult to derive sound procedures for team development from even the best research-based concepts. The individual charged with responsibility for designing a team development program finds himself faced squarely with some very complex problems. As he sets out to design procedures for developing or improving a team, he encounters the question of the team attributes he should develop. Indeed, as he goes about identifying desired team attributes, he must resolve the deeper problems of the nature of "teamness," how this rather nebulous concept can be translated into something meaningful and concrete, and how "teamwork" can be developed. Is the result of development to be the acquisition of individual technical skills performed by each member; the learning of team skills, which, though performed by individuals, fit together interdependently to produce a collective product; perceptual and attitudinal changes, which produce a "team perspective" among the members and, accordingly, influences joint behavior--or all of these? Answers to questions such as the above are essential before sound team development procedures can be specified.

In the discussion which follows in this chapter, a systematic framework for addressing the above issues will be proposed. It is the product of an intensive analysis of all of the reviews listed earlier, study of many of the publications mentioned by them, and a survey of 250 additional publications covering the period 1940-1988.

As in Chapter III, it is not the intention here to present just one more comprehensive recitation of all of the literature concerned with teams and team performance. Rather, the purpose is to set out a meaningful, literature-based framework for understanding battle staff integration, how it affects battle staff functioning ("teamwork"), and how it may be developed in battle staffs.

Such an analysis seems to be needed. As far back as 1977, Collins concluded, after a study of team training, that team training technology is underdeveloped and that few advances had been made within the preceding 10 years. Some of the specific deficiencies Collins cited were: absence of a theory of team behavior; lack of population data on teams; limited analytical techniques and criteria for the study of teams, their training, and their performance; few assessment, evaluation, and feedback systems for use by operational military units during team training; lack of an instructional system development (ISD) model for teams; and absence of team training guidelines for use in design of large, complex, team training devices. Collins might have added also a lack of acceptance by military trainers of innovative team training strategies.

Nieva et al. (1978) concurred with Collins concerning the lack of understanding of team performance, and went on to conclude that a principal reason is that insufficient attention is focused upon understanding the nature of group performance itself. In other words, Nieva et al. concluded that inordinate attention has been given to group attributes and their impacts and not enough has been devoted to the dynamics of group performance. Then, they presented a conceptualization of team, or group, performance which differentiates between the individual and interactive components of performance. Thus, Nieva et al. have a concept and a methodology for analyzing the interactive concepts of team performance.

This would appear to be a highly constructive approach. The products of most writers have been purely descriptive, i.e., in terms of lists of attributes or of classification schemes. Although every reviewer and many researchers have been careful to mention the essence of "teamness" or "teamwork," most have given fairly short shrift to these aspects and have moved on to some classificatory scheme that would appear to offer a more immediate and concrete product.

Thus, the dynamics of teams and of team performance have been passed over rapidly. Those aspects that appear to offer the most promise for team training and development rarely receive the attention they deserve.

Battle Staff Integration is closely related to, if not identical with, "teamness" and "teamwork." In fact, "teamness" may be the generic concept for "integration" within battle staffs. Accordingly, it would seem most practicable to develop an approach to Battle Staff Integration within the context of teamwork.

1. Premises

The fundamental premises for this analysis are:

- (1) To be effective, a battle staff must perform as a unified social system which executes competently all of the organizational functions (processes) needed to enable a combat unit to adapt to and cope with every condition presented by its battlefield environments.
- (2) Maximally effective performance of a battle staff as a unified system requires full integration of members' roles, attitudes, and activities.

2. Definitions

- (1) *Teamwork is defined as activities performed by team members in such a manner that each activity is coordinated with every other one and contributes to the superordinate goals of the unit or supports the activities of other members.*
- (2) *Battle Staff Integration is the force which melds together the roles, attitudes, and activities of members, and is manifested by the integration of group structure and function and, hence, by unit integrity.*
- (3) *A team consists of:*
 - (a) *at least two people, who*
 - (b) *are working toward a common goal/objective/mission, where*
 - (c) *each person has been assigned specific roles or functions to perform, and where*
 - (d) *completion of the mission requires some form of dependency among the group members.*

The above definition of "team" is Dyer's (1985), and, as noted by Dyer, it is quite similar to the widely used definition by Hall and Rizzo (1975), except that it does not include their requirement for a formal team structure. This permits wider application of the concept.

3. Battle Staffs as Open Social Systems

As discussed earlier, a battle staff serves as the control sub system of a combat unit. As a team, the battle staff itself is an open system responsible for command and control activities within the unit.

A variety of models have been devised to describe teams. However, most researchers concerned with military teams have concluded that a systems approach best

captures the dynamic nature of teams, and, further, that a simple input-process-output paradigm is most useful for understanding the relationships between environment, team, and performance (Dyer, 1985; Hackman and Morris, 1975; Meister, 1976; Nieva et al., 1978; Knerr et al., 1980; Shiflett, 1979).

According to Knerr et al. (1980), input variables "describe the initial state of a task-oriented group and they include organizational/environmental/situational, individual member, and team specific factors." Team Interaction Process "entails all observable interpersonal behavior that occurs between two arbitrary points in time . . ." (Collins, 1977, pp. 3-39). These processes "mediate between input and output. Output variables, which result from input conditions and team interactive processes, include task performance and interactive components" (Knerr et al., 1980, p. 13).

Although some of these systems models are complex (Roby, 1968), most are simple paradigms illustrating the straightforward effects of inputs and internal conversion processes upon outputs. Such simple models are useful in identifying variables and determining where relationships exist.

Unfortunately, these simple models tell us little about the nature of factors that influence the performance of processes, and thus, about how battle staff integration can be achieved. This was recognized by McDavid and Harari (1968) who defined a team as "an organized system of two or more individuals who are interrelated so that the system performs some function, has a standard set of role relationships among its members, and has a set of norms that regulate the function of the group and each of its members."

a. Role Systems

Apparently, a more complex model will be required if battle staff integration is to be thoroughly understood. One concept that provides a valid stepping stone to team integration is that of *Role System* (Katz and Kahn, 1966, pp. 452-472).

A Role System is an open social system whose structure consists of a set of *roles* which are defined by *task demands*. The system is maintained by *norms* and *values* held in common by all or most of its members.

As the patterned interdependent activities of human beings, social systems are defined mainly by *roles*, which are the patterns of behavior associated with the various positions in each system (Katz and Kahn, 1966, pp. 51-33). A role consists of (1) the formal duties of the position as defined by the system and (2) the expectations held by all

other members about how the role should be performed. Thus, a role is the set of perceptions and expectations held by both the position occupant and other people about how the duties of the position should be performed. In theory, role enactments are dictated by and appropriate to task demands and system requirements. They are not necessarily appropriate to the personality expression of the individual (Katz and Kahn, 1966, p. 455). However, it should be apparent that there is great potential for instability in roles and for discrepancies in role perceptions and role expectations, *depending upon the degree of integration in the system* (Kahn, Wolfe, Quinn, Smoek, and Rosenthal, 1964, pp. 19-73). With greater integration, there should be less discrepancy between the role perceptions of position occupants and the role expectations of other members.

Social systems "are characterized also by a set of *norms* and *shared values*, which [when functioning properly] integrate rather than differentiate; that is, they are [held in common] by all (or many) members of the system" (Katz and Kahn, 1966, p. 51), and produce common attitudes which constrain deviation and insure required uniformities in member behavior.

System norms, or group standards, *are expected uniformities of behavior held in common by all, or most, of the members* (Cartwright and Zander, 1953; Sherif, 1936). Norms serve two functions: (1) they provide standards against which members may evaluate the situations they encounter, and (2) they serve as standards which guide the respective role performances of members. Norms refer to the expected behavior sanctioned by the system and thus have a specific *ought* or *must* quality (Katz and Kahn, 1966, p. 52). Although, in organizations, norms refer mainly to role performance, they may also apply to other than role-related behaviors.

Shared values provide the rationale, or justification, for the constraints and requirements dictated by norms. They are beliefs about what behavior is "right" or correct and what is "wrong" or incorrect with respect to performance of both own and others' roles.

System norms and values have the general function of tying people into the system so that they remain within it and carry out their role assignments (Katz and Kahn, 1966, p. 52). This function is what is referred to as "integration." The more specific functions are: (1) system norms and shared values provide cognitive maps for members which facilitate their performance of their roles, and (2) norms and values provide the moral or

organizational justification for system activities both for role occupants and for people formally outside the system. The result is cohesion, or integration.

Of particular importance is the fact that an organization or team can exist only so long as people can be induced (1) to be members or role occupants and (2) to perform as such. Accordingly, Katz and Kahn (1966, p. 454) recognize an essential dichotomy between *operational* (production) inputs and processes, and *maintenance* inputs and processes. Operational inputs and processes are the materials, energies, and activities directly contributory to the mission-related activities of the organization. Maintenance inputs and processes are the energy and informational contributions necessary to hold the people in the system and persuade them to carry out their role-prescribed activities as members of the system (see also Benne and Sheats, 1948). No organization or team can exist without (1) the more or less continual acceptance by its members of organizational expectations concerning performance of required activities and (2) the motivation to engage in that performance.

Thus, a role system is a set of functionally specific, interrelated behaviors generated by interdependent tasks. Role and performance requirements derive from system requirements (task or mission demands). The forces which maintain the role system are the task (mission) demands, shared values, and the observance of norms.

Accordingly, *a battle staff is a role system driven and controlled by operational (task) demands and maintained by shared values and norms.*

What is being discussed here is battle staff integration and the commitment of members to the battle staff and the parent unit. Integration occurs when members are committed and hold shared values and common norms about the performance of their respective roles. As one illustration, Greenbaum (1979) concluded, after an extensive study of small military units in combat (World Wars I and II, Yom Kippur War, Korean War), that:

- (1) Properly led individuals in combat units will develop strong bonds of identification with one another--these bonds are functional, serving to control individual fear and helping the individual to be effective in his work.
- (2) Individuals will use others in the unit as a standard of comparison for competence, values, emotions, and a sense of well-being--such comparisons are a product of pressure toward cohesion in the face of stress; and
- (3) The processes of affiliation and comparison contribute to the powerful influence which the small group exerts on the individual.

In a similar way, battle staffs can serve as "reference groups" for their members. A *Reference Group* is a group with which an individual identifies and to which he refers for standards to guide his behavior and against which to gage the situations which he encounters (Merton and Kitt, 1950). Thus, if a battle staff is a strong reference group for an individual and a standard of the battle staff is for coordinated actions, i.e., teamwork, he is much more likely to value coordinated behavior and will be much more likely to coordinate his actions with those of other members.

George, Hoak, and Boutwell (1963) conducted a series of studies of infantry rifle teams and concluded that: coordinate response behavior becomes habitual in effective teams, response coordination is learned by trial and error when team members are individually competent in their roles, and it becomes habitual when members are task oriented because the resultant improvement in team performance is reinforcing to such persons.

To summarize, battle staffs are best described as "role systems." The roles in the system are the official positions occupied by members of the battle staff. Integration is the force which melds the activities of members and it derives from norms and shared values held by members of the battle staff. The strength or degree of integration that exists in the battle staff is dependent upon the level and nature of cohesion within the battle staff and the parent unit, and is manifested by the integration of unit structure and function.

B. BATTLE STAFF FUNCTIONS

It will be useful to review briefly the command and control functions performed by a battle staff. As described in Chapter II, the general functions of a battle staff involve:

- (1) Solving problems both in terms of planning operations and of supervising activities during ongoing combat operations.
- (2) Making numerous decisions ranging from major tactical determinations to those required to supervise small-unit actions on a minute-to-minute basis.
- (3) Supervising the ongoing activities of the unit as a whole and of subordinate units individually. Thus supervision involves both monitoring activities and providing guidance and direction.
- (4) Coordinating both own and subordinates' activities so that all contribute efficiently to the unit's objectives, as well as those encompassed by the larger mission.

- (5) Coordinating the unit's activities with those of adjacent and supporting units, and with higher organizational levels, so that the unit's actions are congruent with both the larger mission and missions of adjacent units.

The uniqueness of the battle staff as a team is that, at one time or another and to one degree or another, any or all of the above functions may need to be performed by one or every member, both individually and collectively. In battle staffs, responsibilities may be carefully delineated for each member; however, considerable overlap may exist among role functions for the different positions. Furthermore, performance of the functions may be subject to situational demand. For these reasons, teamwork in battle staffs may be less cleanly defined than in more simple task-defined teams.

At this point, an important question arises, "What is required in order for the above functions to be performed effectively by battle staffs?"

1. Requirements for Effective Functioning

In a comparison of individual and team training, Briggs and Johnston (1967) concluded that the relative value of individual and team training depends on the complexity of the task situation. Here, "complexity" referred to the array of stimulus inputs, control operations, and the level of uncertainty in the task as a whole, and the degree of structure in the task situation (Kner et al., 1979). Briggs and Johnston concluded that team training becomes more valuable as task situations become more complex.

Boguslaw and Porter (1962, p. 395) devised a scheme for classifying task situations, based upon the nature of the team task and the context in which the task must be performed. According to Boguslaw and Porter:

An established situation is one in which (1) all action-relevant environmental conditions are specifiable and predictable, (2) all action-relevant states of the system are specifiable and predictable, and (3) available research technology or records are adequate to provide statements about the probable consequences of alternative actions. An emergent situation is one in which (1) all action-relevant environmental conditions have not been specified, (2) the state of the system does not correspond to relied-upon predictions, (3) analytic solutions are not available, given the current state of analytic technology.

When an emergent situation arises, the coordination demands placed on a team increase and may influence performance. As Kner et al. (1980, p. II-6) noted, the emergent nature of military operational settings "increases demands for coordination, communication, and cooperation within the team." These demands tend to complicate team

functions. According to Meister (1976) and Olmstead et al. (1973), they also tend to degrade team performance.

Military teams train for and work in emergent combat situations. Battle staffs especially are faced with situations characterized by lack of structure and by high levels of turbulence and uncertainty. There is no question that battle staffs operate in the emergent situations described by Boguslaw and Porter, and, accordingly, also follow the "organismic" team model, devised by Alexander and Cooperband (1965) to contrast with a "stimulus-response" model. The "stimulus-response" model applies to teams operating in established situations like those described earlier.

Since organismic teams function in highly emergent situations, the requirements for effective functioning become highly complex. In contrast to stimulus-response teams, battle staff functioning requires not only a greater variety of skills, but, in addition, other highly complex attributes discussed below. Because the task situations are highly complex, "team training" becomes much more valuable, as concluded by Briggs and Johnston (1967).

The effective functioning of battle staffs in the highly emergent situations of the modern battlefield requires at least the following:

- (1) Role-Specific Individual Skills
- (2) Team Performance Skills
- (3) Integration.

Role-Specific Individual Skills. Following Dyer (1980), "individual skills" refers to activities that could be or are performed by individual members independently of other team members. Such activities are specific to and defined by the roles of the individual members. Although, in simple team tasks, individual task performances may be mutually exclusive and, thus, may be summed to produce a simple team product (Nieva et al., 1978, p. 53), there is considerable overlap among the complex role requirements of battle staff members. Accordingly, more complex processes of combination may occur.

Nevertheless, *Role-Specific Individual Skills are the skills required to perform those activities specific to the respective battle staff roles and which are performed independently of other team members.* Although an element of all battle staff role definitions, coordinative skills are not "individual skills."

Team Performance Skills. Again, following Dyer (1980), "team performance skills" refer to the skills needed to execute activities/actions that are performed in response to the actions of other team members or that guide/cue the actions of other team members. Although they are the skills of individual members, they contribute to the performance of the team functions of Nieva et al. (1978). Whereas both Nieva and Knerr view team functions and team processes respectively as operations of the team as an entity (Nieva et al., 1978, p. 62), team performance skills remain the skills of individual battle staff members. They are required by individual members in order for them to contribute to the collective execution of team functions or team processes.

In effect, these are the skills of coordination. They are skills that must be performed by the various battle staff members to insure that everyone is kept informed and that all activities mesh efficiently.

Integration. As defined earlier, *battle staff integration is the force which melds the roles, attitudes, and activities of members.* In the terminology of group psychology, integration refers to the cohesion, or cohesiveness, of the battle staff as a group. Cohesion produces a coincidence of the psychological fields of members. This shared perspective is "battle staff integration." Through its influence upon the norms and values held by members, it enhances unity within the system and focuses individual and team skills upon the task requirements of the system.

Thus, it appears that the effective performance of battle staff functions requires:

- (1) Role-Specific Individual Skills
- (2) Team Performance Skills
- (3) Integration of the Battle Staff.

The remainder of this chapter will be devoted to an analysis of factors contributing to effective integration and teamwork. The development of individual and team performance skills will be discussed in later chapters concerned with training and development of battle staffs.

C. CHARACTERISTICS OF EFFECTIVE TEAMS

So far in this chapter, the discussion has centered around some fundamental definitions and concepts. There was an attempt to extract from the morass of team literature some basic concepts that appear to have particular relevance for battle staffs. Now, it is

important to examine, in greater depth, the attributes of effective teams and the determinants of effective teamwork.

In the beginning, it is important to state that an effective battle staff is a team, albeit somewhat more loosely structured than many machine-dominant teams that are the focus of much current literature. On the other hand, some battle staffs are not teams at all. Rather, they are collections of individual relationships with the unit commander in which each subordinate concerns himself only with his self-interests and those of his own unit. Under such circumstances, real teamwork is impossible.

Some of the properties and performance characteristics of effective command teams are as follows:¹

- (1) *Knowledge and Skills.* All members are skilled in the technical military, role, and leadership functions required both to direct their own units or staff sections and to serve as effective members of the command team.
- (2) *Attitudes.* All members like the team and the unit and are loyal to other members, including the commander. Furthermore, the commander and all team members have a high degree of confidence and trust in each other. They believe that each member of the team can accomplish "the impossible." These expectations stretch each member to the maximum and help him to realize his highest potentialities.
- (3) *Motivation.* The members of the command team are highly motivated to meet the performance standards and to accomplish the missions of the overall command. Each member will do all in his power to help the command achieve its objectives, and he expects every other member to do the same. He is eager not to let other team members down. He strives hard to do what he believes is expected from him. He is ready to communicate fully all information which is relevant and of value to the team's and the unit's work, and is genuinely interested in receiving relevant information that any other member of the team can provide. The motivation and ability of members of the team to communicate easily contribute to the flexibility and adaptability of the unit.
- (4) *Working Relationships.* Members of the command team have developed well-established working relationships among themselves. The relationships are pleasant and mutual assistance is the rule. When necessary, others will give a member the assistance he needs to accomplish his assignments successfully.

¹ The characteristics of the ideal military team follow Department of the Army Pamphlet 600-15, October 1968, pp. 169-171, and were originally adapted from R. Likert, "Characteristics of Effective Groups," *New Patterns of Management*, McGraw-Hill Book Company, Inc., New York, 1961, pp. 166-169.

- (5) *Objectives and Standards.* The steadying influence of objectives and values held in common by all members provides a stabilizing factor in the command's activities. When members of the command team are also commanders of subordinate units, they endeavor to have the objectives and performance standards of their units in harmony with those of the larger command.
- (6) *Atmosphere.* Problem-solving and decision-making activities of the command team occur in an atmosphere which is stable, informal, comfortable, and relaxed. There are few obvious tensions; it is a working atmosphere in which people are interested and personally involved. Respect is shown for the point of view of others, both in the way contributions are made and in the way they are received. There may be real and important differences of opinion, but the focus is on arriving at sound solutions and not on aggravating the conflict. The climate is sufficiently constructive for subordinates to accept readily any criticism that is offered and to make the most beneficial use of it. This constructive atmosphere, with the feeling of security it provides, contributes to cooperative relationships among the members.

Individuals also feel secure in making independent decisions which seem appropriate for their subordinate units or other elements, because the climate is one of clearly stipulated objectives and policies which provide each member with a solid framework for his decisions. This encourages initiative and pushes decisions to the appropriate level while maintaining a coordinated and directed effort.

- (7) *Command Climate.* The commander attempts to lead in a manner which seems most likely to create a constructive climate and cooperative rather than competitive relationships among the members of the command team. Although the commander exercises full responsibility, he does not try to do everything himself. He develops his subordinates into a team which, under his guidance, makes better decisions and operates more effectively than he could do alone. He works to help the team develop efficient communication and effective relationships, which provide it with better information, more technical knowledge, more facts, and more experience for decision-making purposes than any single person alone can marshal.

The commander knows when to use "constructive conformity" and for what purposes. He expects compliance on policy and procedural matters; however, he does not permit conformity requirements to adversely affect the efforts of his subordinates to perform well. In short, the commander tries to establish a workable balance between necessary compliance with those policies and procedures basic to coordination and excessive conformity on unessential matters.

These and other characteristics have been commonly observed in effective high-level command teams (Olmstead, 1968). Every battle staff probably will show some of these characteristics at one time or another; however, it seems reasonable that the more effective teams should consistently demonstrate a preponderance of them. What produces these effects in some teams and not others? It is at precisely this point that the concepts of "integration," "cohesion," or "cohesiveness" become critical.

D. COHESION AND ITS EFFECTS

When people work together toward mutual goals and when they undergo meaningful common experiences, the resulting interaction produces changes in their perceptions, emotions, thinking, attitudes, and actions (Sherif and Sherif, 1956). The distinguishing feature of these changes is that the individual comes more and more to identify his feelings, thinking, attitudes, and actions with his group. Persisting personal relationships and values evolve and become stabilized providing him with organized, enduring, and motivationally significant ties and rewarding experiences. These satisfactions may influence his attitudes toward other aspects of the work.

1. Effects of Cohesion

When an individual is able to interact with, and thus maintain close relationships with, members of a group in which he is highly accepted, his job satisfaction is usually higher (Van Zelst, 1951; Zaleznik, Christensen, and Roethlisberger, 1958). Similarly, workers are more satisfied when they belong to a group which they like and whose members like them. Greenbaum (1979) found similar results in his study of small military units discussed earlier.

Central to an understanding of group relations and of their effects upon satisfaction and team performance is the concept of "group cohesiveness," or "cohesion." The term *cohesion* refers to the feeling of group pride and solidarity that exists among members (Sherif and Sherif, 1956). It has also been defined as "the extent to which group members share the same norms" (Coch and French, 1948).

In individual terms, "cohesiveness" has been defined in a variety of ways. Thus, one popular definition (Festinger, Schacter, and Bach, 1950) refers to cohesiveness as the attractiveness or valence of a group for its members, or in Lewinian terms, as the resultant of all of the forces acting on all of the members to remain in the group. Cartwright and Zander (1966) described cohesiveness in terms of willingness of group members to work

together toward a common goal, to overcome frustration or endure pain to accomplish that goal, and to readily defend the group against external criticism or attack. They have postulated that cohesiveness depends upon two categories of factors: (a) the properties of the group, and (b) the needs of the members. Although the definitions in this paragraph can be made operational for research purposes, ease of discussion makes the definition of Sherif and Sherif (1956) preferable. Here, *cohesion will be defined as group pride and solidarity.*

There have been numerous studies of both the effects of cohesiveness and conditions necessary for its development, and, although some results have been mixed, there seems to be almost unanimous agreement that cohesiveness is central to any understanding of groups, teams, and of group influence. Gross (1954), in a study of small work groups within the Air Force, found that satisfaction with the Air Force and personal commitment to group goals were directly related to group cohesiveness. These findings have been supported by a long series of studies, many of which were summarized by Kahn and Katz (1953) and Likert (1961) and which show that cohesiveness tends to be positively correlated with productivity, although the relationships are not always high or consistent. On the other hand, studies by McCurdy and Lambert (1952), Albert (1953), Berkowitz and Levy (1956), Pepitone and Kleiner (1957), Deutsch (1959), and Deep, Bass, and Vaughn (1967) report failures to find significant relationships between group cohesiveness and effectiveness. In addition, negative relationships between cohesiveness and performance have also been found (Grace, 1954; Palmer and Myers, 1955; and Stogdill, 1972).

Despite these mixed results, the predominance of findings favor cohesiveness as a major determinant of satisfaction and performance (Maier, 1955; Harrell, 1958; Tiffin and McCormick, 1958; Herzberg, Mausner and Snyderman, 1959; Koontz and O'Donnell, 1959). However, at this point an important distinction becomes necessary.

After many years of research, it has become clear that no simple relationship exists between cohesiveness and work group effectiveness. A group will not necessarily be outstandingly productive simply because it is highly cohesive. An additional factor to consider is the norm held by the group (Schacter, Ellertson, McBride and Gregory, 1951; Seashore, 1954; Speroff, 1968). Cohesive groups usually have strong norms; however, the important questions that must be asked are, "What are the norms?" and "In which direction are the norms oriented--positive or negative--with respect to goals of the organization?" It is possible for a highly cohesive group to possess strong norms for low productivity, in which case high cohesiveness would not result in performance considered

effective by the organization. On the other hand, if the norms of the group value high performance, effectiveness will usually result.

As a result of a review of research on group effectiveness, Mills (1967) concluded that cohesive groups are more productive than less cohesive groups. Cohesiveness was manifested in the more effective groups through greater commitment to goals, more open communication, greater coordination, and more friendly interpersonal relations. However, of even more significance for training and team development, Mills found that a "circular relationship" exists between group effectiveness and solidarity. That is, as the group becomes more successful, it also becomes more cohesive. In short, experiences of success while a group is working together make the group more cohesive. Gill (1977) went even further by maintaining, on the basis of his research, that the predominant causal direction is from performance to cohesion, rather than vice versa. According to Gill, effective performance produces greater cohesion, rather than cohesion producing more effective performance.

For training and development, the implication is clear. The provision to teams of "success experiences" should result in improved cohesion.

The conclusions from this discussion of team cohesion are important. They are that two factors appear to be necessary for effective team performance:

- (1) A group situation that is (a) attractive to the members and (b) generates pride and solidarity (Cohesion), and
- (2) Strong group norms which value high performance.

2. Conditions Necessary for Cohesion

Besides leadership, one of the few areas that has been investigated with any degree of thoroughness is concerned with the effects of group properties upon performance. Much of this work was summarized by Likert (1961).

When organizational incumbents work together over time, norms, status structures, and patterns of interaction develop. These group attributes exert lasting influence upon the ways members go about their tasks and the levels of motivation that are achieved. The development of such properties is most pronounced in small, face-to-face, primary groups (e.g., squads, crews); however, even at levels above the basic unit, there exists the potential for the development of genuine team properties. Thus, Likert (1961) considered the development of group properties to be especially desirable among those individuals

who "link" the various levels and groups within the larger organization. In combat units, "linking functions" are performed by individuals occupying command and control positions.

Group relations influence execution of system process activities in at least two ways. First, group relationships influence the motivation of members to perform their role-prescribed activities, and, under high cohesion, to perform beyond the requirements of their official roles. Second, group relations determine the extent to which members share perspectives concerning organizational requirements and expectations (Blau, 1954; Blau and Scott, 1962).

There is little doubt that cohesiveness is the critical attribute in team effectiveness. Accordingly, it becomes important to examine certain underlying conditions which are necessary for the development of goal-oriented cohesiveness within military teams.

In general, cohesiveness will be increased by conditions which cause group members to develop common perceptions of events and problems, to evolve shared perspectives of themselves and their group, and to become consistently and harmoniously committed to the activities and objectives of the group. On the other hand, cohesiveness will be disrupted by conditions which encourage tendencies opposite to these.

The general conditions necessary for the development of cohesion are (Olmstead, 1968):

- (1) Common objectives conducive to cooperation
- (2) Shared experiences
- (3) A stable and efficient organization
- (4) Shared norms of performance and behavior.

a. Common Objectives Conducive to Cooperation

The development of a unified organization occurs through the interaction of personnel who possess common objectives and, hence, common motives. When people share objectives which require cooperative action to achieve, they will work together.

The phrase "conducive to cooperation" is especially important. All objectives experienced by a number of people at the same time and in the same place are not necessarily conducive to cooperation. On the other hand, "superordinate goals" always require the coordinated efforts and resources of all the individuals involved. Superordinate

goals are those objectives which are equally compelling for all and cannot be ignored, but which cannot be achieved by the efforts and resources of one individual alone (Sherif, 1962, p. 10). This does not mean that every objective of every individual in every group must be identical. However, there are usually one or more goals which are central within a group and these weigh heavily in determining the kinds and qualities of activities that will result.

It is not sufficient that an organization, or team, merely possesses objectives. Each member must perceive, even though dimly, that other people also face a set of circumstances or a problem which can be solved, escaped, ignored, or dealt with in some fashion by cooperating with one another. Therefore, it is equally important for every member to consciously perceive that such objectives exist and that cooperative effort is required to achieve them.

Shared objectives serve the essential function of generating cooperative interaction between individuals and between units or sections. Only when this interaction occurs is it possible for stabilized relationships and shared norms (values and standards of behavior) to develop. Stable organizational relationships and shared norms are necessary for teamwork. Accordingly, common objectives are an essential condition for team development and the development of team cohesion.

b. Shared Experiences

When people work together toward common objectives and undergo common experiences that are meaningful, the resulting interaction produces changes in their perceptions, emotions, thinking, attitudes, and actions. The distinguishing feature of these changes is that the individual comes more and more to identify his feelings, thinking, attitudes, and actions with the group (Sherif and Cantril, 1947). Furthermore, persisting personal relationships and values evolve and become stabilized. These provide each individual with organized, enduring, and motivationally significant ties with the group. Thus, over time, the individual becomes a part of a functioning system which exerts a major influence upon his experience and his actions.

Close identification with other personnel and with the group which symbolizes this relationship rarely occurs unless members have undergone common experiences. Similarly, uniform standards of performance and behavior have their foundations in the shared experiences of team members.

Groups are held together by stable relationships (functional integration) and common attitudes (normative integration) among their members (Sherif and Sherif, 1956, p. 160). Persisting relationships and common attitudes evolve and become stabilized only when people undergo significant experiences together (Sherif and Sherif, 1953).

Shared experiences thus serve two important functions. First, they permit personnel to become familiar with one another, to learn each other's characteristic ways of behaving, and through this familiarization process, to develop stable expectations relative to performance and ways of working. Second, shared experiences provide personnel with a common frame of reference. Because they have undergone the same experiences, members view things from similar perspectives. They are bound together by having experienced unique events to which others have not been exposed.

Of particular significance are experiences of success (Mills, 1967; Gill, 1977). Probably nothing contributes so greatly to cohesiveness as successful action. Success operates to confirm the validity of the group's ways of operating and gives the individual confidence in himself and in the group. A long tradition of success appears to produce much greater cohesiveness. As a secondary effect, tradition of success is likely to provide the group with greater prestige, thus encouraging more ready identification by members. Success is effective, however, only as it is experienced, and it is experienced only in relation to the goals perceived by the personnel. An action by a group is deemed successful by members only if the members become aware that their efforts have actually resulted in achievement of the group's goals. Leader control of this factor is possible through such measures as setting realistically high team objectives, insuring that team members already recognize the objectives, and furnishing adequate evaluation of the results of team efforts in relation to the objectives (Lewin, 1947).

Just as shared experiences of success tend to enhance cohesiveness, experiences which are perceived by team members as failure of the group are disruptive. Severe or consistent failure usually results in loss of confidence, bickering, recriminations, and deterioration of cohesion. The amount of disruption that will occur depends upon both (1) the level of cohesiveness reached prior to the initial failure and (2) the severity of the failure. High prior cohesiveness, together with mild failure, may result in nothing more than minor loss of confidence and a slight lowering, if any, of level of aspiration, which may be rapidly recovered. At the other extreme, low prior cohesiveness and strong failure can result in severe disruption of cohesiveness (Lewin, Dembo, Festinger, and Sears, 1944).

It should be clear that failure alone does not necessarily result in disruption of cohesiveness. The critical factor appears to be whether failure causes team members to lose confidence in their leaders, the unit, or in themselves.

c. A Stable and Efficient Organization

High cohesion requires sufficient organizational stability for emotional and social bonds to develop (Kelley and Thibaut, 1969). Both integration of role and task functions and the development of strong norms require that people work together long enough for common perceptions and values to evolve. Neither can reach a very high level when there is a great deal of turbulence and instability in the unit. Replacement and transfer policies which result in frequent movements of personnel into and out of teams are not conducive to high cohesion (Griffith, 1989).

Coordinated action requires that each individual be able to predict with a reasonable degree of accuracy how other relevant members will behave and, furthermore, he must know what others expect of him. In short, organized effort requires a system of stable expectations in terms of how each member should and will perform (Katz and Kahn, 1966, p. 339).

The state of team affairs commonly referred to as "solidarity," "cohesion," or "battle staff integration" is largely a consequence of a stabilized structure of relationships in which the various members meet expectations which define their particular roles and functions (Olmstead, 1968). When a team reaches a level in which all members have clear expectations of how each relevant person will perform and, more important, have strong confidence that every individual can be relied on to fully meet these expectations, high cohesion can be said to exist.

Stable expectations evolve from stable relationships. It is impossible for people to know with any degree of certainty the requirements for their own or others' behavior if relationships are superficial, temporary, or inconsistent. Where relationships are unstable, ambiguity and lack of confidence are likely to be prevalent.

The formal unit structure serves as the basic framework for the development of stable relationships and expectations. The formal organization provides general definitions of the duties and responsibilities of each position in a team. However, when people with common goals work together over a period of time, informal expectations may also become

stabilized (Sherif and Sherif, 1953). These may not necessarily be in full agreement with those definitions put forth by the formal organization.

The extent to which there is agreement between formal duty requirements and informal role expectations is a potent determinant of system (team) effectiveness (Katz and Kahn, 1966, pp. 452-472). Where wide discrepancies exist, command, control, and coordination may be exceedingly difficult. The efficiency of the unit's communication, authority, and decision processes determine whether such discrepancies will exist. Where these organizational processes function effectively, commanders are able to insure that their definitions of desired behavior are the accepted ones.

d. Shared Norms of Performance and Behavior

Norms are attitudes and codes of behavior held in common by all or most members of a group (Sherif, 1936; Sherif and Sherif, 1953). In small-group contexts, they are also referred to as "group standards" (Cartwright and Zander, 1953 and 1960). A team may develop norms relative to what constitutes a fair day's work, what level of performance is desirable, the amount of coordination that is needed, how far and how fast a unit ought to travel at night, etc. In short, norms can be developed around just about anything having to do with the life and work of the personnel.

From the team's standpoint, norms are important because of the strong influence they exert on the actions of personnel (Katz and Kahn, 1966, pp. 51-53). Norms regulate the behavior of members in matters of relevance to the unit. When people have an emotional investment in a group or organization and have internalized its values, norms provide them with a basis for governing their behavior and for evaluating the actions of others. The more integrated and cohesive the organization, the more strongly do norms exert influence (Sherif, 1962).

It should be self-evident that cohesion is also related to communication (Back, 1961; Bavelas, 1953; Guetzkow, 1965; Leavitt, 1951). Those norms which give rise to cohesion are the products of interaction between people. These interactions must take the form of communication of some sort. Therefore, cohesion is strongly dependent upon communication. In general, the principle can be set forth that increased communication between members will heighten cohesion--unless the communication is unpleasant, critical, hostile, or otherwise divisive (Cartwright and Zander, 1960, pp. 69-94).

E. TEAMWORK

Teamwork depends upon battle staff integration. If a group is not integrated, teamwork is likely to be minimal--regardless of efforts to develop it. On the other hand, where integration in a group is high, there is greater potential for the development of teamwork. However, it does not necessarily follow that good teamwork automatically will also be present.

High cohesion seems to be a necessary ingredient for the development of teamwork, but not the only one. For teamwork to be developed, a number of other elements are essential.

1. The Nature of Teamwork²

Many factors operate to encourage the development of team relationships among personnel at organizational levels appropriate for battle staffs. Common membership in a particular unit, the possession of a common terminology, the sharing of a common doctrine, common problems with regard to the current operational situation of the unit and common understandings of its significance, the possession of common means and channels of communication, the fact of frequent association, and shared values regarding the necessity for working as a team--these are all factors which enhance the development of teamwork.

Nevertheless, the presence of the above factors alone will not assure effective teamwork. In addition, the development of a closely knit team requires each member to possess a frame of reference which embraces cooperation and coordination as operational requirements.

a. Cooperation and Competition

When people act at cross purposes, it is because they are impelled by individual, rather than common, motives or by motives which are incompatible and irreconcilable (Bonner, 1959, p. 46). On the other hand, teamwork develops through the efforts of individuals who possess motives that require cooperative activities for their attainment (Sherif and Sherif, 1953).

² This section is adapted from and follows Department of Army Pamphlet 600 15, October 1968, pp. 171-173. See Olmstead, 1968.

When members of a group engage in activities which are competitive and reciprocally frustrating, such that achievement of a desired objective by one member results in defeat or loss for other members, unfavorable and protective attitudes develop between the individuals which result in additional competition and reduced cooperation between them (Sherif and Sherif, 1953).

As used here, "competition" refers to something more intense than so-called "friendly rivalry," such as is frequently encouraged between military units or individuals with some sort of prize as the reward to the winner. Rather, "competition" refers to activities where important interests and/or welfare of an individual or unit are at stake and where success by one results in potentially serious loss by another. The essence of a truly competitive situation is that one individual or group must win and others must lose.

When serious stakes are involved, the urge to win becomes primitive and basic. Therefore, if the goal taken by each individual or unit is to "win" over the others, the consequences for teamwork are substantial (Blake and Mouton, 1962). Under such conditions, the negative attitudes that are generated usually intensify the conflict and erode mutual respect and confidence among the members. When attitudes of this nature become predominant within a team, actions designed to protect self-interests and enhance personal aspirations are likely to take precedence over those which would contribute to a common objective.

On the other hand, when cooperation is the prevailing attitude, members tend to view the team as a whole and other members individually in a favorable light. Members tend to work with others in order that mutual objectives may be better accomplished. Furthermore, communication is used to reduce conflict rather than to aggravate it. When individuals pull together, favorable information about other members is seen in a positive light and the probability of information being effectively used is enhanced.

2. Determinants of Teamwork

The development of closely coordinated teamwork requires:

- (1) Superordinate objectives which are meaningful, clear, and desired by all (Sherif, 1962, p. 10);
- (2) A system of potential rewards for contributing to team effort (Deutsch, 1949); and
- (3) An organizational system which provides effective operating procedures and efficient patterns of communication among the members (Likert, 1959, p. 267; Reicken and Homans, 1954, p. 813).

Clear superordinate objectives and a meaningful system of rewards focus efforts upon common aims and motivate members to cooperate and coordinate. The organizational system channels the motivation to cooperate into effective actions.

a. Clear Superordinate Objectives

As discussed earlier in this chapter with regard to cohesion, superordinate objectives are those goals which are equally compelling for all and cannot be ignored, but which cannot be achieved by efforts and resources of one individual or group alone. They require the coordinated efforts and resources of all the individuals or units involved. As discussed in relation to battalion or battalion task force battle staffs, superordinate objectives would be those of the battalion or task force, or even a brigade or division. Teamwork depends upon the recognition, acceptance, and commitment to battalion or task force objectives by every member of the battle staff, to include especially the commanders and personnel of subordinate units.

Among other things previously discussed, cohesion depends upon commitment to superordinate objectives; however, in addition, teamwork depends also upon the clarity of such objectives. Probably the most significant characteristic of effective objectives is that they are clear. To steer activities and to mobilize coordinated effort, an objective must be specifically formulated in concrete terms and carefully communicated so that every relevant person understands it (Cartwright and Zander, 1960, p. 345).

The most obvious effect of unclear objectives is poor coordination among units and among personnel (Deutsch and Gerard, 1953). Coordinated effort requires that everyone understand missions and objectives in the same way (Raven and Rietsema, 1957). Lack of clarity leaves room for each unit to place its own interpretation upon objectives and, equally important, upon the kinds of activities to be derived from them.

The importance of clear objectives is obvious. The principal function of objectives is to provide personnel with concrete and specific targets toward which to work and with specific standards against which to evaluate activities. Accordingly, it is essential for commanders to insure that the objectives derived for missions are clear and unequivocal.

b. Reward Systems

Cooperation is most likely to develop when members can receive significant satisfactions from behaving cooperatively and when competitive behavior is not rewarded

or is even punished. The system of rewards in a unit is an important determinant of teamwork (Deutsch, 1949; Deutsch and Gerard, 1953).

The critical factor appears to be whether or not members of the battle staff can receive satisfaction of their personal needs only when they contribute to team effort. In a cooperatively organized group (one in which the more significant rewards are given for team effort), no individual can move toward his personal goals without also forwarding the progress of other members and of the larger organization, while the reverse is true of a competitively organized group (one in which rewards may be obtained for efforts which further individual interests without contributing particularly to team efforts).

c. Organizational System

No matter how high the motivation to cooperate and coordinate, teamwork will not result unless member efforts are effectively channeled. Therefore, teamwork also requires an efficient organizational system which provides a means through which activities of team members can be integrated and coordinated (Likert, 1959, p. 207; Reicken and Homans, 1954, p. 813).

The term *organizational system* refers to those practices and procedures used to perform such functions as exercising direction, assigning responsibilities, exchanging information, making decisions, organizing, coordinating, etc., within the battle staff. The organizational system includes the formal organization and its procedures; but, it goes beyond them to also encompass the various less formal means by which the activities are integrated and coordinated. These interdependent processes constitute an overall system which channels and guides the activities of the battle staff. For this reason, it has been deemed more appropriate to refer to "the organizational system" rather than merely to "organization" as a determining factor.

Effective teamwork requires an organizational system which will insure that, consistent with their missions, objectives, and responsibilities, members are provided with all of the information, decisions, guidance, and assistance necessary for them to perform their roles effectively and to contribute appropriately to the overall unit effort. In short, effective teamwork requires a system capable of providing all elements with the guidance, support, and coordination needed for them to perform their respective roles effectively.

V. A MODEL FOR ORGANIZATIONAL COMPETENCE

Chapters V and VI present two models which, taken together, comprise an operational framework for developing effective battle staffs. In this chapter, an operational model for Organizational Competence is described and both laboratory and field tests of the model are reported. In Chapter VI, an operational model for Battle Staff Integration will be presented and assessed for its feasibility in battle staff training and development.

A. ORGANIZATIONAL COMPETENCE

The concept of *organizational competence* is intended to encompass within one term the functions, or processes, required by organizational systems for effective accomplishment of missions or objectives. The concept derives from the analysis of open systems theory and concepts described in Chapter III, especially those of Bennis (1966) and Schein (1965, 1970). It also derives from the recognition that one of the most critical determinants of the effectiveness of any organization is the ability of that organization to accurately identify, solve, and cope with problems that arise in constantly changing environments. The capability of the organization to perform these functions is what is meant by "organizational competence."

It is conceived that organizational competence is a major operational determinant of organizational effectiveness. Where effectiveness is the final outcome (mission accomplishment, productivity, achievement of objectives, etc.), competence is the ability of the organization to perform the critical operational functions (processes) that lead to the achievement of effectiveness.

When the organizational processes that comprise competence are performed well, they enable a unit to cope with problems arising in its operational environments. When handled poorly, their effects may negate many of the positive effects contributed by efficiency in other areas of military activity.

The ability of a unit to maintain organizational competence under the pressures of combat would seem to be closely related to its ability to sustain effectiveness. If the organizational processes break down when the unit is subjected to external pressures,

effectiveness will be impeded. On the other hand, if the processes continue to function adequately, effectiveness should be maintained or enhanced.

B. THE COMPETENCE MODEL

As discussed in Chapter III, combat units, e.g., battalions or combined arms task forces, are conceived to be open systems engaged in interaction with a number of significant environments (the physical environment, opposing forces, higher organizational levels, adjacent units, supporting elements, etc.) that are external to the units. In order for a unit to be effective, i.e., to accomplish missions or to achieve assigned objectives, it must assess accurately all of its significant external environments, as well as its own internal environment; process information resulting from such assessments; determine all required actions; and execute the actions such that they lead to accomplishment of missions or the achievement of objectives.

In short, a combat unit must be capable of assessing accurately the operational requirements of the combat situations in which it is engaged and of performing all functions needed to meet the requirements. In this report, execution of required organizational functions has been termed "organizational competence."

1. Components of Competence

Organizational competence is conceived to comprise three components (see Bennis, Chapter 3):

- (1) *Reality Testing*. Capability of the unit for assessing the operational situation facing it--the ability of the organization to search out, accurately perceive, and correctly interpret the properties and characteristics of its environments (both external and internal), especially those properties that have particular relevance for the functioning of the unit.
- (2) *Adaptability*. Capability for solving problems that arise from changing environmental demands and operational requirements, and for acting flexibly and with effectiveness in response to these changing requirements.
- (3) *Integration*. Capability for maintaining unit structure and function under stress, and a state of relations among sub-units which insures that coordination is maintained and the various sub-units do not work at cross-purposes. (Bennis called this attribute "Identity," see Chapter III).

Taken together, these three components constitute organizational competence. The adequacy of the components, both collectively and individually, strongly influences the

effectiveness of a military unit. Furthermore, the ability of a unit to maintain adequate performance in each component while under pressure from external forces is critical for the unit's effectiveness.

2. Organizational Processes

As developed from Chapter III, seven organizational processes are the constituent elements of organizational competence. The processes are:

- (1) *Sensing*--The process by which the organization acquires information concerning the states of, or events occurring in, the environments, both external and internal, which are significant for the effective accomplishment of objectives. The specific nature of Sensing activities that are required may differ according to the type and mission of the organization and the character of the environments that are significant to it. Whatever their specific nature, all Sensing activities involve seeking, acquiring, processing, and interpreting information.
- (2) *Communicating Information*--Those activities whereby information concerning an organization's environment is made available to those individuals who should act upon it. This process involves the initial transmittal of information by those who have sensed it, the relaying of information by intervening levels, and the dissemination of the information throughout the organization. Most important, the process also includes "discussion and interpretation"--those communicative acts through which clarification is attempted or implications of the information are discussed.
- (3) *Decision Making*--Those activities leading to the conclusion that some action should be taken by the organization or someone within the organization. This process is limited to the deliberative acts of one or more persons and is usually evidenced by the initial communication of the decision by the decision-maker. Decisions may be made that lead to Coping Actions, Stabilizing Actions, formal Sensing Actions and Feedback Actions.
- (4) *Stabilizing*--The process of taking action to adjust internal operations or of otherwise taking action to maintain stability and functional integration within the unit in the face of potential disruption that might result from events in the environment or from actions taken within the unit.
- (5) *Communicating Implementation*--The process whereby decisions and resulting requirements are communicated to those individuals who must implement them. In addition to the straightforward transmission of orders or instructions, this process also includes "discussion and interpretation"--those communicative acts through which clarification is achieved and implications for actions

are discussed. Of particular importance in this process are those activities of individuals who relay instructions between the original decisionmaker and the individual(s) who ultimately implement the decision.

- (6) *Coping Actions*--Those activities involving direct action against external and internal environments. This process is concerned with the actual execution of actions at points of contact with the target environments. Accordingly, it is the ultimate determinant of effectiveness. Whereas all other processes influence the performance of Coping Actions, these actions in turn determine the effect of the organization upon the target environment.
- (7) *Feedback*--The process of assessing the effects of a prior action through further sensing of the external and internal environments and evaluating the effects of the prior actions.

Each of the above processes is related to one of the components of organizational competence. The relationships are as follows:

<u>Competence Component</u>	<u>Organizational Process</u>
Reality Testing	Sensing, Communicating Information, Feedback
Adaptability	Decision Making, Communicating Implementation, Coping Actions
Integration	Stabilizing

Competence is concerned with the quality of performance within an organization. Although each process must be performed at least to a minimal amount, frequency of process performance is not a major factor. The essence of competence is quality--how well the processes are performed. The following criteria illustrate the qualitative requirements of each process:

- (1) Sensing
 - (a) Accurate detection of all available information.
 - (b) Correct interpretation of all detected information.
 - (c) Accurate discrimination between relevant and irrelevant information.
 - (d) Relevance to mission task, or problem of all attempts to obtain information about the environment.
- (2) Communicating Information
 - (a) Accurate transmission of relevant information.
 - (b) Sufficient completeness of transmission to achieve full and adequate understanding by recipient.

- (c) Timely transmission of information.
 - (d) Transmission to appropriate recipients.
 - (e) Correct determination of whether information should be transmitted.
- (3) Decision Making
- (a) Correctness of decision in view of circumstances and available information.
 - (b) Timeliness of decision in view of available information.
 - (c) Consideration in the decision process of all contingencies, alternatives, and possibilities.
- (4) Communicating Implementation
- (a) Accurate transmission of instructions.
 - (b) Sufficient completeness to transmit adequate and full understanding of the actions required.
 - (c) Timely transmission in view of both available information and the action requirements to recipients.
 - (d) Transmission to appropriate recipients.
- (5) Actions: Stabilizing, Coping and Feedback
- (a) Correctness of action in view of both the operational circumstances and the decision or order from which the action derives.
 - (b) Timeliness of the action in view of both the operational circumstances and the decision or order from which the action derives.
 - (c) Correctness of choice of target for the action.
 - (d) Adequacy of execution of the action.

Thus competence is the adequacy with which an organization performs its critical processes, or functions. When the processes are performed adequately, they assist an organization to be effective. When handled poorly, they may negate many positive effects contributed by efficiency in other areas.

Organizational competence is the quality of performance of a unit's command and control system. Therefore, the importance of competence for tactical units is self-evident. Competence (quality of process performance) displayed by a unit's command and control personnel *as a team* plays a most potent role in military operations.

C. TESTS OF THE MODEL

Two major tests of the Organizational Competence model were conducted by research personnel of the Human Resources Research Organization (HumRRO) under the designations of Project FORGE and Project Cardinal Point. Results of the tests are described in the following sections.

1. Project FORGE¹

Project FORGE (Factors in Organizational Effectiveness) was conducted by research personnel of the Human Resources Research Organization (HumRRO) at Fort Benning, Georgia, from July 1968 to June 1971. The project was designed to accomplish several broad research objectives.

- (1) To determine the relationship between organizational competence and organizational effectiveness within combat units.
- (2) To evaluate the separate contributions of each of the components of competence and determine the relative contributions of the seven organizational processes used to operationalize the components.
- (3) To determine the effects of environmental pressures upon competence and determine the relationship between effectiveness and the ability of an organization to maintain competence under pressure from its environments.

To accomplish these objectives, it was necessary to observe and assess the activities of battle staffs as they performed in realistic tactical situations, evaluate their military effectiveness, measure their performance on the hypothesized organizational processes, and analyze the relationships between measures of effectiveness and indices of competence, its components, and its processes.

2. Method

The overall method was to simulate the activities of a light infantry battalion engaged in internal defense operations in the Republic of Vietnam. The specific method of simulation was one-sided role playing, in which Vietnam-experienced officers filled the roles of 12 key command and control positions in the battalion. All inputs into the

¹ A detailed description of Project FORGE appears in the following publication: Olmstead, J.A., Christensen, H.E., and Lackey, L.L. *Components of Organizational Competence: Test of a Conceptual Framework*. Technical Report 73-19, Human Resources Research Organization, Alexandria, Va. August 1973. The material in this section is an abbreviated version and adaptation of the original report.

simulated battle staff were made by Vietnam-experienced experimenter-controllers in the roles of personnel at brigade, platoon, and adjacent unit levels. Through the use of pre-planned and scheduled inputs, a dynamic and realistic stimulus situation was generated, which provided continual and systematic, i.e., planned, environmental changes, and placed stringent requirements upon the simulated unit to make rapid and flexible responses. All communications were monitored and these communications provided the data for analysis.

According to the research design, the simulated battle staff was exposed to a series of combat events, extending over a real-time period of approximately 8 hours, to which it was required to respond. Although activities of the simulation and the subjects were uninterrupted over the entire period, the scenario was designed in three administrative phases, all of which differed in the intensity of environmental pressure. "Pressure" was defined in terms of task load, as determined by frequency and complexity of inputs.

The Test Subjects. Test subjects were 120 Vietnam-experienced Infantry officers, ranging in grade from senior major to first lieutenant. They participated in 10 battle staffs of 12 men each, thus providing for 10 replications of the simulation. Each 12-man group participated once. Subjects were randomly selected with the restrictions stated below, from non-student officers at Fort Benning, Georgia. For the selection of personnel to participate as players, it was specified that all participants should be combat-experienced Infantry officers who had served in Vietnam, and that each group should consist of at least one major and not more than four first lieutenants. Second lieutenants were not accepted. Table V-1 summarizes characteristics of the test subjects.

Table V-1. Characteristics of Experimental Subjects

Rank	N	Age (Mean Years)	Length of Service ^a (Mean Years)	Combat Experience ^b		
				Brigade or Battalion Staff	Company Commander (N)	Platoon Leader (N)
Major	12	31.7	9.9	9	9	2
Captain	78	27.8	8.6	3.5	54	46
1st Lieutenant	30	26.3	6.0	8	7	17

^a Includes enlisted service.

^b Number of subjects with various types of combat experience exceeds total number of subjects because some individuals reported service in more than one position.

Within each group, the senior officer was assigned the role of battalion (task force) commander. Accordingly, the 10 battalion commanders were majors, 9 of whom had served on brigade or battalion staffs in Vietnam. In approximately 90 percent of the cases, players assigned to battalion staff roles had prior experience as principal or assistant staff officers in the relevant activity. In the remaining 10 percent, the roles were assumed by officers who had prior staff experience but in a different staff section. One of the more senior officers in each group was assigned the role of task force executive officer. After battalion command and staff positions were filled, the remaining officers were assigned as company commanders. Thus, the test subjects consisted of 10 *ad hoc* groups. However, in large part, the members of each group were experienced combat officers.

The Simulation. The purpose of the research was to study the functioning of infantry battalions in rapidly changing combat environments. To provide such an environment, an internal defense operation in the Republic of Vietnam was chosen as the vehicle for simulation, and it was decided that the simulation should be operated on "real time"--that is, the time frame within which simulated events were to occur would closely correspond to time required for actual events of similar nature in the real world.

The simulation was activated and major directions were controlled by Brigade Operations Orders. Continuous action was maintained and minute-by-minute control was exercised by inputs from controllers.

Early in an initial exploratory study, it was learned that an organizational simulation is a highly complex vehicle that requires careful planning, if control is to be exercised and data recovered efficiently. Accordingly, a method for controlling inputs and for recovering meaningful data was developed. The method is based upon the concept of a *probe*. A probe is a problem which is designed to stimulate a particular subsystem of the organization and through which data can be recovered separate from that concerned with other probes. Thus, probes can be planned to challenge all the different subsystems and to cover a wide spectrum of problems and activities.

Operationally, a probe is a set of inputs consisting of one or more messages designed to provide information about the problem or to stimulate action by the organization concerning the problem. A single input about a probe is a *probe element*. In FORGE, probes consisted of from 1 to 50 probe elements. Taken together, probe elements concerning a single probe make up a pattern of information about the problem. However, elements pertaining to a single probe can be inserted at different points in the organization,

at different times, and by different sources. Thus, they possess an unfolding quality that requires the organization to assemble and properly interpret all of the information about a probe before it can act correctly.

Except for a small number of contingent inputs, all probe elements in the FORGE simulation were scheduled to be inserted in the same numbers and at the same times for all test groups. This method insured that all groups were exposed to the same experiences and, therefore, that data would be comparable across groups. The scenario was designed to present 128 probes, containing 376 probe elements.

Design of the scenario on the basis of probes made it possible to control all inputs according to a planned schedule and insured that all test groups were exposed to identical environmental conditions. Equally important, probes were also the basis for data recovery to be discussed later.

The research design included a requirement for exposing the battle staff to different degrees of environmental pressure in the three operational phases of the simulation. Pressure was defined as "situational demands requiring immediate attention of participants." To manipulate pressure according to the design, the following input characteristics were varied across phases: (a) frequency of inputs to which players were required to respond, (b) complexity of probes, in terms of number of elements comprising a probe, and (c) rated criticality of probes for mission accomplishment and unit survival (probe weight). Characteristics of the inputs are shown in Table V-2.

Table V-2. Characteristics of Simulation Inputs

Input Characteristics	Phase			Simulation
	I	II	III	
No. of Probes	51	31	46	128
No. of Probe Elements	77	91	208	376
Probe Complexity (N probe elements/ N probes)	1.5	2.9	4.8	2.9
Input Rate (N probe elements/minutes)	0.6	0.7	1.5	0.9
Mean Probe Weight	2.4	3.7	4.4	3.5

Thus, in Phase I (low pressure), the scenario involved a slow-moving, routine patrolling operation, with a low ratio of input from controllers and relatively uncomplicated probes, many of which were not critical for accomplishment of the battalion's mission. On the other hand, Phase II (moderate pressure) began with a radical change in mission, continued with a requirement for final planning and execution of an air assault within a short span, and included both more frequent and more complex inputs and more critical probes. Finally, Phase III (high pressure) involved intense combat with an opposing force, and a high frequency of inputs and a majority of problems that were both complex and critical for survival of the unit.

Players could communicate in any manner that was consistent with Army procedure and with the simulated physical positioning of the various units. Available modes of communication were face-to-face, written message, and radio. Players within the battalion Command Post and Administrative-Logistics Area could communicate either face-to-face or by written message. Because of the nature of the tactical operation in which the simulated battalion was engaged, most communications between levels occurred by radio.

The communications system included nine simulated radio nets--brigade (2 nets), battalion (2 nets), and company nets (5). Communication by radio was simulated by field telephones augmented by loudspeakers. Simulation by the use of telephones and loudspeakers made it possible to achieve the realism of radio while maintaining the reliability of wire communication. Furthermore, tape recorders were connected to all wire nets, enabling the research staff to monitor and transcribe all radio conversations.

3. Data

The sources of data were all written, face-to-face, and radio communications of each test group. Written messages were preserved on printed message forms. All face-to-face and radio communications were tape recorded. These audio recordings were later transcribed by typists so as to provide printed transcripts of all oral communications that occurred during the simulation.

Reduction of these products to quantitative data required procedures for (1) determining the outcome of each probe by analysis of the communications and evaluating the military effectiveness of each outcome, and (2) classifying communications according to a set of systematically derived categories (organizational processes), and evaluating the communications in accordance with the conceptual framework.

All communications referring to each probe were extracted from the transcripts and assembled, by time sequence, into "probe manuscripts" which contained all of the communications performed by a particular group concerning a specific probe. The result was 128 probe manuscripts for each test group. With the development of probe manuscripts, each of which contained all communications from initial input to final response pertaining to a particular probe, it became possible to evaluate the performance of a simulated battle staff in terms of both (1) its military effectiveness and (2) its organizational competence, as defined by the quality of the processes included in the Adaptive-Coping Cycle.

Military Effectiveness. It is difficult to evaluate military effectiveness objectively because of factors, either fortuitous or enemy-contrived, that may intervene to influence the outcome of a combat operation. Certainly, in a simulation of the nature and complexity of the one reported here, the evaluation of effectiveness must eventually rest upon expert judgment. Since some bias is inherent in all judgment, a very elaborate procedure was designed to minimize bias insofar as possible and to produce accurate evaluations of the military effectiveness of the various test groups. A detailed description of the development of the evaluation procedures appears in the FORGE technical report (Olmstead et al., 1973). A brief summary is presented here.

After completion of controller training and a pilot simulation but prior to conduct of the simulation with test groups, each of the seven controllers developed a set of all possible outcomes for each probe. Then, each individual independently assigned to each outcome a descriptor that best described his evaluation of the outcome in terms of its effectiveness for resolving the problem posed by the probe and for contributing to overall mission accomplishment. The descriptors were Highly Satisfactory, Satisfactory, Marginal, Unsatisfactory, and Highly Unsatisfactory.

To evaluate military effectiveness, probe manuscripts of the test groups were analyzed by a military expert (retired field-grade officer) who had not participated in development of the probe outcomes. This individual read each probe manuscript and identified the outcome that had actually resulted. Then, he compared the actual result for the probe against the set of potential outcomes that had been developed by the controllers. From each set, he selected the outcome that matched the actual result and identified the descriptor that had been assigned the outcome by the Controllers. The descriptor was converted to a "Probe Effectiveness Score" according to the following point scale: Highly

Satisfactory, 50; Satisfactory, 40; Marginal, 30; Unsatisfactory, 20; Highly Unsatisfactory, 10.

Thus, rater bias was minimized by the development of criteria independent of the evaluator, and by the requirement that the evaluator assign scores based on the previously determined consensual outcomes. For each group, the result was a Probe Effectiveness Score for each of the 128 probes. These scores served as the basic units of statistical analysis from which phase and simulation effectiveness scores could be developed. A group's Phase Effectiveness Scores were the sums of the Probe Effectiveness Scores within the respective phases, and the Simulation Effectiveness Scores were the sums of the three Phase Effectiveness Scores. Accordingly, Probe Effectiveness Scores, in their various combinations, served as criteria of Combat Effectiveness against which all other variables were compared.

Organizational Competence. The analysis of organizational competence included (a) performance of a content analysis of each unit of communication; (b) classification of each communication unit in terms of the process represented by it; (c) evaluation of each communication unit in terms of how well the organizational process represented by it was performed, and, finally, (d) the development of group scores for each organizational process, each competence component, and overall competence.

The system of content analysis was conceived in the initial exploratory study which preceded Project FORGE, and was developed, refined, and evaluated during analysis of the communications of four groups that participated in a pilot test of the simulation. When three coders, working without carefully articulated coding criteria, used the system to independently code four probe manuscripts (approximately 200 units of communication), they agreed on 76 percent of the units scored. This percentage of agreement is better than those reported in most descriptions of content analysis systems.

The system of content analysis that was used is a method for classifying units of communication according to a set of defined categories. Like all schemes for analyzing content, it provided information concerning frequency of occurrence of the several processes. In Project FORGE, analyses that involved frequency and rate of organizational processes were essential and were performed. However, as a determinant of organizational effectiveness, *quality of process performance* was deemed to be equally, if not more, important than frequency or rate. Accordingly, quality--how well the processes were performed--was also evaluated.

During the content analysis, each unit of communication was coded to indicate the organizational process it served. After coding was complete, a military expert who had not performed any coding activities, evaluated the quality of performance of the process.

The following scale was used to assign values to processes: Poor, 10; Marginal, 20; Adequate, 30; Excellent, 40. Values were assigned on the basis of the quality of the processes and not their effectiveness. That is, evaluation was in terms of how well the process was performed, regardless of its ultimate effect upon subsequent processes or upon the outcome of the probe.

Criteria for assigning values to process performance were those discussed earlier in this Chapter in connection with the Competence Model.

4. Results

Activities of Simulated Organizations. Group activities in the simulation are summarized in Table V-3. Data concerned with contacts indicate the level of activity within the groups. For one run of the simulation (total simulation), the mean of approximately 1,377 contacts per group and the mean rate of 51 contacts per 15-minute period show that the simulation generated a high level of activity, which is typical for command and control personnel in combat operations of the type under consideration here.

The reductions in frequency and rate of contacts that occurred during Phase II, despite the increase in inputs, probably reflect the particular nature of the probes for that phase. Phase I concluded with issuance of a Fragmentary Order for an air assault into a new Area of Operations. Accordingly, much of Phase II was consumed with planning, preparation, and movement of patrols to landing zones for extraction by helicopter. These activities did not require the minute-by-minute radio communication characteristic of more intensive phases of combat. Therefore, the total number of resulting contacts was reduced. On the other hand, the increase in contacts per probe and in contact time per probe from Phase I to Phase II reflect the increased complexity and importance of the problems for Phase II.

Group Performance. Frequencies of occurrence and scores for the major variables for the total simulation are summarized in Table V-4. For all entries except Effectiveness, responses were free to vary. That is, no ceiling existed for the frequency with which any process could be performed. Therefore, frequency of process performance by a group

Table V-3. Summary of Organizational Activities

Activity	Phase I		Phase II		Phase III		Total Simulation	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Contacts (frequency)	467.2	36.3	354.3	39.9	555.8	39.3	1,377.3	91.8
Rate of Contacts ^a	51.9	4.0	39.4	4.4	61.8	4.4	51.0	4.4
Contacts per probe	9.2	0.7	11.4	1.3	12.1	0.9	10.8	0.7
Scoring units (frequency)	595.1	35.9	424.2	46.2	781.4	50.2	1,800.7	99.9
Scoring units per probe	11.7	0.7	13.7	1.5	17.0	1.1	14.1	0.8
Total contact minutes	306.4	38.4	248.2	26.4	374.0	31.5	928.6	81.0
Contact minutes per probe	6.01	0.75	8.01	0.85	8.13	0.69	7.25	0.63
Minutes per contact	0.66	0.06	0.70	0.05	0.67	0.04	0.68	0.05
Minutes per unit	0.52	0.06	0.59	0.04	0.48	0.03	0.53	0.06

^a Rate = Number of contacts per 15-minute period.

Table V-4. Summary of Frequencies and Scores for Major Variables and Sub-Variables

Variable	Frequency		Score	
	Mean	SD	Mean	SD
Effectiveness	128.0	0.0	3,214.5	198.0
Competence	1,800.7	99.9	17,179.8	1,570.9
Processes:				
Sensing	567.7	41.7	5,832.2	599.1
Communicating Information Sensed	443.6	45.6	4,029.6	395.5
Decision Making	261.2	20.6	2,909.0	380.3
Stabilizing	3.4	5.9	67.6	107.2
Communicating Implementation	288.6	39.4	2,174.2	236.8
Coping Actions	234.1	25.8	2,139.4	206.3
Feedback	1.1	1.5	28.0	39.9

reflected that group's unique propensity for performing processes and was not controlled by any design features other than the number of inputs--which was constant for all groups. On the other hand, Effectiveness scores for the simulation were summations of scores on each of the 128 probes and, accordingly, Frequency of Effectiveness scores for every group was 128 with a maximum possible score of 6,400 (128×50).

Two aspects of the data are especially noteworthy. First, the groups did not perform many Stabilizing and Feedback actions. Reasons can only be conjectured but detailed scrutiny of the probe manuscripts suggests some possible explanations. One possibility is that the players perceived the simulation as a temporary condition in which future-oriented activities were not essential. The second possibility is that, in the heat of combat operations, mission-oriented officers do not concern themselves with activities that are not directly related to the achievement of immediate objectives, even though such activities possess the potential for preserving unit integrity and effectiveness. Such omissions would reflect extreme shortsightedness and serious default in a critical leadership activity.

The paucity of Feedback scores appeared to be due to an anomaly in the scoring system. This anomaly was corrected in later studies.

The second noteworthy aspect of the data summarized in Table V-4 is the difference between frequencies for the various processes. Sensing was more than twice as frequent as Decision Making, which illustrates the fact that a single decision often stems from multiple sensing events. Communicating Information occurred less often than Sensing, reflecting the selectivity that often occurs in the transmission of information from those who have sensed it to those who must make decisions.

Communicating Implementation occurred more often than Decision Making. This fact suggests that many single decisions require numerous linking and clarifying communications in order for the decisions to be implemented.

Finally, the fact that Coping Actions occurred less often than Decision Making suggests the possibility of aborted or unimplemented decisions. This important finding will be examined in a later section.

Process Frequency and Combat Effectiveness. At the beginning of Project FORGE, it was conjectured that one possible determinant of organizational effectiveness might be the frequency of process performance, i.e., how often a battle staff performs organizational processes. Accordingly, a Pearson product-moment correlation was

computed between Simulation Effectiveness scores and frequency of occurrence of all processes. The result was a correlation coefficient of .33, which is not significantly different from zero correlation ($N = 10$). Accordingly, it appears that *Effectiveness is not related to the total number of processes which are performed. If Competence (Process Performance) is related to Effectiveness, the source must lie elsewhere than in the frequency with which the organization performs its critical processes.*

Organizational Competence and Combat Effectiveness. Intercorrelations between the scores of major variables and sub-variables are shown in Table V-5. Of particular interest are the relationships of Organizational Competence and its components with Combat Effectiveness.

Table V-5. Intercorrelations: Major Variables and Sub-Variables

Variable	1	2	3	4	5
1 Combat Effectiveness	**	.93**	.96**	.79**	.55
2 Organizational Competence		**	.94**	.92**	.33
3 Reality Testing			**	.73*	.10
4 Adaptability				**	.43
5 Integration					**

* $p < .05$. Correlations are based upon eight degrees of freedom.

** $p < .01$.

For this study, the most important finding is the relationship between Competence and Effectiveness for the 10 groups studied. The correlation coefficient of .93 is highly significant ($p < .01$) and indicates a strong relationship between the two variables. Under the conditions of this study, Competence accounts for 86 percent of the variance in Effectiveness. Therefore, it is concluded that *Organizational Competence is a principal determinant of Combat Effectiveness.*

Competence is the quality of process performance, i.e., how well the organizational processes are performed. The finding of a very high relationship between Organizational Competence and Combat Effectiveness, together with the previously discussed finding of very little relationship between frequency of process performance and effectiveness, permits the conclusion that *the principal contributor to Effectiveness is how well organizational processes are performed and not how often they occur.*

The finding that Organizational Competence is a major determinant of Combat Effectiveness confirmed the principal hypothesis and accomplished the fundamental objective of the research.

Components of Organizational Competence. The three components of Organizational Competence are Reality Testing, Adaptability, and Integration. Each component encompasses one or more organizational processes and each is conceived to be a critical aspect of an organization's ability to master its environment. Reality Testing is the capacity of the organization to search out, accurately perceive, and correctly interpret the properties and characteristics of its environments--in short, the information acquisition and information processing functions of the organization. This component includes three processes--Sensing, Communicating Information, and Feedback. Adaptability is the capacity of an organization to solve problems arising from changing environmental demands and to act effectively and flexibly in response to these changing demands. Adaptability includes three processes--Decision Making, Communicating Implementation, and Coping Actions. Integration is the maintenance of structure and the stabilization of function under stress, and includes one process--Stabilizing.

Table 5 shows correlations with Combat Effectiveness of .96 for Reality Testing, .79 for Adaptability, and .11 for Integration. Thus, both Reality Testing and Adaptability were significantly related to Effectiveness. On the other hand, correlation of Integration with all variables was not significant and, in fact, the relationships were quite small. This lack of relationship is explained, at least in part, by the relatively few occurrences of Stabilizing and the fact that the process was not performed at all by four groups. The result was a highly restricted variance for Stabilizing, and, thus, for Integration, which, in turn, led to low correlations with other variables.

A multiple correlation was computed between the Competence components and Combat Effectiveness. For this correlation, $R = .97$. Beta weights for the components were .79 for Reality Testing, .25 for Adaptability and $-.08$ for Integration. Because multiple correlation coefficients are unstable with small N's, the resulting coefficient of .97 is probably inflated. Therefore, a correction for bias was computed and a corrected coefficient of .94 was obtained. It should be noted that this corrected multiple correlation coefficient is quite close to the zero-order correlation between Organizational Competence and Combat Effectiveness.

The high relationship between Reality Testing and Adaptability ($r = .73$) is to be expected. As described in the conceptual framework, the processes that comprise the

Adaptive Coping Cycle are not independent. Rather, a chain exists in which the quality of each process depends, in part, upon the quality of preceding processes in the cycle. For example, the quality of a particular decision will partly depend upon the quality and amount of information available to the person making the decision. The information that is available will depend upon the quality of prior Sensing activities and, where communication occurs, will depend also upon the quality of Communicating Information. Thus, significant relationships would be expected between the various processes.

In the same way, the quality of Adaptability depends upon Reality Testing. To effectively adapt its operations to fluctuating environmental conditions, an organization must first acquire the appropriate information, interpret it correctly, and, finally, communicate it accurately to all relevant decision makers. Reality Testing includes those organizational functions through which a unit develops its perception and understanding of its situation in relation to its environments. A unit's ability to adapt effectively to events in its combat environments, in part, depends upon the extent to which the battle staff of that unit has an accurate understanding of the reality of that environment. Thus, if the processes included in Reality Testing are performed well, the probability of effective performance of the Adaptability functions is enhanced; if Reality Testing is poor, effective performance of Adaptability will be less probable. Therefore, it was expected that a relationship would be found between Reality Testing and Adaptability.

Of special interest are the relative contributions of the various Competence components to Combat Effectiveness; Reality Testing contributed about 76 percent, and Adaptability 20 percent. The contribution of Integration was negligible (-.008 percent). Other factors may have contributed, but it is apparent that both Reality Testing (information acquisition, processing, and interpretation) and Adaptability (decision making and execution) are critical determinants of military effectiveness. It is also apparent that, in Project FORGE, Reality Testing contributed more than Adaptability, which demonstrates the importance of information acquisition and processing to the effectiveness of combat units.

Organizational Processes. The fundamental elements of Competence are organizational processes. The processes are seven conceptually different, but not independent, functions that are performed by all organizations. Performance of each process contributed to the total Competence score of each simulated battalion. Accordingly, knowledge of the relationships of each process to Combat Effectiveness,

Organizational Competence, and other processes has critical importance for understanding the dynamics of organizational performance.

Intercorrelations between Combat Effectiveness, Organizational Competence, and the various organizational processes are shown in Table V-6. For all processes except Stabilizing and Feedback, correlations with Combat Effectiveness were significant beyond the .05 level of confidence. As discussed earlier in connection with Components of Competence, the fact that Stabilizing and Feedback were not performed by some groups and occurred infrequently in the remaining ones resulted in highly restricted variances which, in turn, produced low correlations with Combat Effectiveness. Obviously, in the FORGE simulation, Stabilizing and Feedback did not contribute to Effectiveness. However, because the lack of demonstrated relationships may have resulted from an anomaly in the simulated situation, it cannot be finally concluded that Stabilizing and Feedback do not possess validity as processes that are important to Combat Effectiveness in the real world. Logic suggests otherwise and the validity of these processes in relation to Effectiveness remains to be fully tested.

Sensing produced the highest correlation with Effectiveness (.92), Communicating Information was second highest (.83), with Decision Making, Communicating Implementation, and Coping Actions somewhat lower and approximately equal (.70, .71, .72). Thus, those processes concerned with information acquisition and information processing showed the highest relationship to Effectiveness; those concerned with Adaptability were also strongly related, but in a somewhat lower degree.

The high intercorrelations between many of the processes illustrate the causal chain posited in the conceptual framework and discussed earlier in connection with Components of Competence. The data in Table V-6 again verify the interdependence of the processes that compose the Adaptive-Coping cycle. In many instances, effectiveness on one process depends upon the quality of processes that precede it in the cycle. *This demonstrates the necessity for good performance on all processes if full Competence and, therefore, Effectiveness is to be achieved.*

An interesting exception is the relation of all subsequent processes to Communicating Information. This process is highly correlated with Sensing ($r = .72$), as would be expected since effective Communication should be dependent upon the quality of information that is acquired. However, it is noteworthy that processes that follow Communicating Information in the cycle are not significantly correlated with it, even though some relationships are indicated. On the other hand, Communicating Information is

highly correlated with Combat Effectiveness ($r = .83$). It appears this organizational process may have contributed something unique to the variance in Combat Effectiveness, something that was not related to any processes other than Sensing.

Table V-6. Intercorrelations: Effectiveness, Competence, and Processes

Variable	1	2	3	4	5	6	7	8	9
1 Combat Effectiveness	**	.93**	.92**	.83**	.70*	.11	.71*	.72*	.03
2 Organizational Competence		**	.95**	.72*	.86**	.33	.77**	.77**	.18
3 Sensing			**	.72*	.79**	.32	.58	.65*	.06
4 Communicating Information				**	.30	-.33	.58	.47	-.08
5 Decision Making					**	.63	.59	.67*	.37
6 Stabilizing						**	.14	.17	.49
7 Communicating Implementation							**	.68*	.29
8 Coping Actions								**	.18
9 Feedback									**

* $p < .05$. Correlations are based upon eight degrees of freedom.

** $p < .01$.

To explore these relationships further, a multiple correlation was computed, with the seven organizational processes as independent variables and Combat Effectiveness as the criterion. Neither the obtained R (.97) nor the corrected R (.86) was significant for the limited degrees of freedom (2) that were permissible with an N of 10 and seven independent variables. However, of more interest for the present discussion are the obtained Beta weights for the several processes, and the percentage that each contributed to Combat Effectiveness. Table V-7 summarizes the results.

It is apparent from Table V-7 that each of the five processes that produced significant zero-order correlations (Table V-6) contributed to Combat Effectiveness in important degree. Once again, the importance was confirmed of the processes involved in assessing combat environments and providing units with accurate perceptions of their combat situations (Sensing, Communicating Information, and Feedback). However, the

most striking point for this discussion is that Communicating Information contributed 43.9 percent to Effectiveness, more than twice the contribution of the next highest process. *This finding suggests the probability that Communicating Information made a unique and significant contribution to Combat Effectiveness, whereas the other four processes each contributed a much smaller amount of unique variance, but also contained a common factor that influenced Combat Effectiveness.*

Table V-7. Summary of Multiple Correlation Between Processes and Combat Effectiveness^a

Process	Beta	Percent Contribution
Sensing	.213	19.3
Communicating Information	.532	43.9
Decision Making	.195	14.0
Stabilizing	.114	1.2
Communicating Implementation	.074	5.0
Coping Actions	.156	11.5
Feedback	-.115	-.4

^a The computed multiple correlation (R) is .97; the R corrected for shrinkage is .86. None of the relationships was significant.

Further understanding of relationships among the organizational processes is provided by Figures V-1 and V-2. For each of the five processes that correlated significantly with Combat Effectiveness, group mean values for each probe were computed by summing all pertinent values within the probe and dividing by the number of occurrences. Thus, for every probe, there were available mean values representing performance on each of the five processes by each group.

All mean process values were then classified as "low" or "high." Values within the range of 10-25 were classified as "low" and those within the range of 26-40 were classed as "high." Classification of scores in this fashion made it possible to evaluate the effects of various high-low combinations of processes upon the performance of other processes.

In the original FORGE study (Olmstead et al., 1973), the effects upon the several processes of all different combinations of preceding process performance were analyzed and the dependency of each process upon the quality of preceding processes was clearly found. Here, only two configurations will be presented. Figures V-1 and V-2 are provided to demonstrate the relationships among the processes.

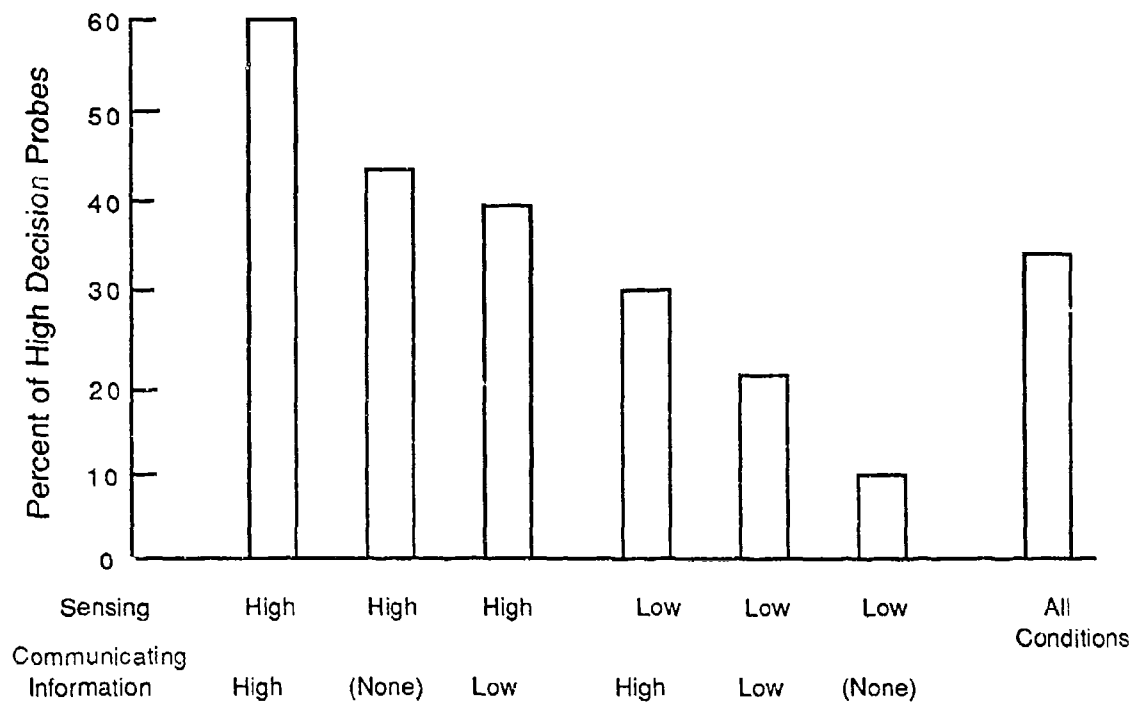


Figure V-1. Effects of Sensing and Communicating Information Upon Quality of Decisions

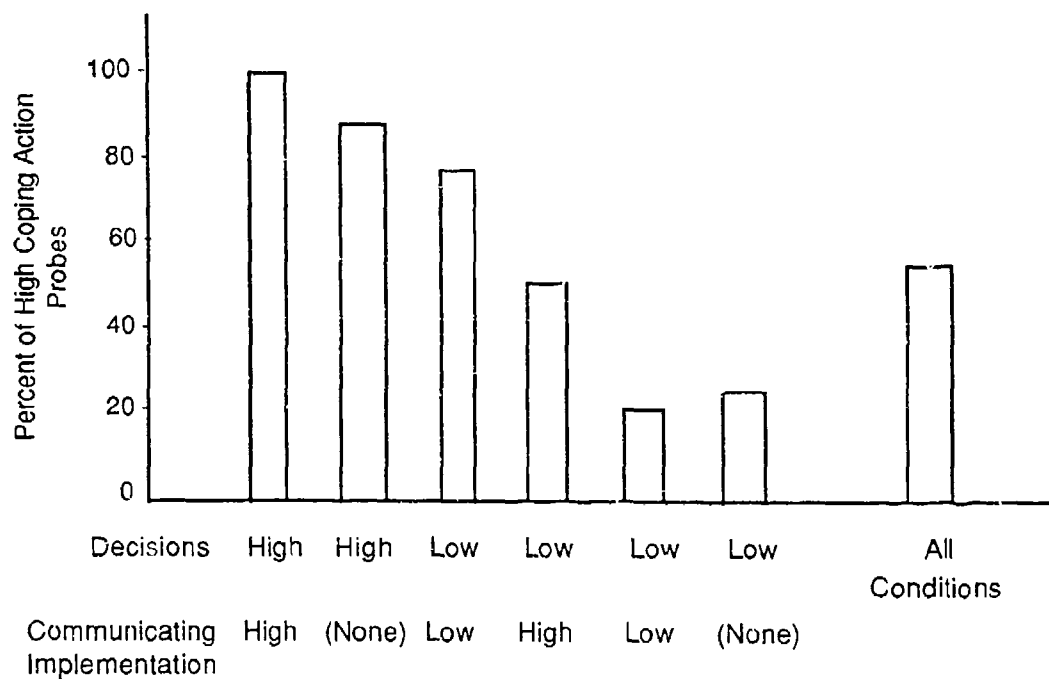


Figure V-2. Effects of Decision Making and Communicating Implementation Upon Quality of Coping Actions

Figure V-1 illustrates the effects of different combinations of Sensing and Communicating Information upon the quality of decisions. For example, for probes on which both Sensing and Communicating Information were high, decisions received high evaluations 60 percent of the time. In contrast, when both Sensing and Communicating Information were low, high-quality decisions occurred only 21 percent of the time. An even more drastic result can be seen when Sensing was low and no communication occurred. High-quality decisions were made on only 9 percent of these probes.

Figure V-1 also shows that high Sensing may be somewhat more important for good decisions than high Communicating Information. This is suggested by the finding that 40 percent of decisions were high when Sensing was high but Communicating Information was low. However, when communication was high but Sensing was low, 31 percent of the decisions were high. *It appears that the completeness and accuracy of the information that is acquired by the unit plays a predominant role in the quality of the unit's decision making.*

The dependence of decision making upon good information and good communication is clearly demonstrated in Figure V-1. However, these results do not suggest that decision making is solely a matter of good information being available to individuals who make decisions. The fact that high decisions occurred on only 60 percent of the probes where Sensing and Communicating Information were good indicates that something more is required--for example, good judgment or decision-making skills. The FORGE data do suggest, however, that *high-quality Sensing and Communicating Information make effective decisions possible and that, without them, the probability of good decisions is exceedingly low.*

Figure V-2 shows the effects of Decision Making and Communicating implementation upon the quality of Coping Actions. When both Decision Making and Communicating Implementation were high, the quality of Coping Actions was also high on 84 percent of the probes. On the other hand, when both Decision Making and Communicating Implementation were poor, only 15 percent of Coping Actions were high. The marked reduction in good Coping Actions when decisions were poor testifies to the critical importance of decision making to actions. Although poor Communicating Implementation resulted in some negative effects upon Coping Actions, it appears that Decision Making was the principal determinant of the quality of Coping Actions.

The data presented in this section clearly show the relationship of process performance to Combat Effectiveness. Furthermore, the data show the cyclical nature of organizational processes. The quality of each later process in the Adaptive Coping Cycle is, in part, dependent upon the quality of those processes that precede it. Therefore, *it is clear that the competence of an organization to cope with its environments depends upon effective performance of each organizational process both separately and in combination.*

Effects of Pressure. The research was designed to evaluate the effects of environmental pressure upon Organizational Competence. Division of the simulation scenario into phases and computation of Competence scores and Effectiveness scores by phase permitted comparisons of each simulated organization's Competence under three different conditions of pressure (Low, Moderate, and High), as well as comparison among the 10 organizations under each pressure condition. It was hypothesized that, under pressure, units with the greatest Organizational Competence would also perform more effectively (Combat Effectiveness) and that units whose Competence deteriorated most under pressure would be less effective in combat.

To determine whether pressure affected Competence of some groups differently than others and whether such differential effects influenced Combat Effectiveness, Competence scores of the five most effective groups and the five least effective groups were compared. The five battle staffs that achieved the highest scores in Combat Effectiveness for the total simulation exercise were identified and placed in a "High Effectiveness" group. The five battle staffs that received the lowest Combat Effectiveness scores were placed in a "Low Effectiveness" group. Mean Probe Competence Scores of the two groups were compared for each phase.

Table V-8 shows Competence performance by phases, and Table V-9 summarizes a groups-by-phases Analysis of Variance. Figure V-3 illustrates graphically the differential effects of pressure upon the two classes of groups.

Competence of the High Effectiveness groups was significantly better than for groups with Low Effectiveness under all pressure conditions.

Interaction between groups and phases was not significant (Table V-9), indicating that pressure effects were in the same direction for both High and Low groups. For both High and Low Effectiveness groups, Competence in Phase II deteriorated from that in Phase I and, for both groups, some recovery occurred in Phase III. However, the amount

Table V-8. Competence Performance of High Effectiveness and Low Effectiveness Groups Under Differing Degrees of Environmental Pressure^a

Pressure Condition	High Effectiveness Groups		Low Effectiveness Groups	
	Mean (N = 5)	SD	Mean (N = 5)	SD
Low (Phase I)	146.5	15.0	136.2	12.3
Moderate (Phase II)	135.2	12.8	114.1	16.0
High (Phase III)	143.4	12.5	122.0	6.7

^a Scores are mean Probe Competence Scores for each phase.

Table V-9. Analysis of Variance for Phase Competence of High and Low Effectiveness Groups

Source	df	MS	F	p
Between Groups	1	2,312.65	8.83	<.05
A (High and Low Groups)				
Groups within classes	8	261.94		
Within Groups	20			
B (Phases)	2	697.04	3.85	<.05
AB	2	101.13	< 1	NS ^a
B x groups within classes	16	181.26		

^a NS = Not Significant.

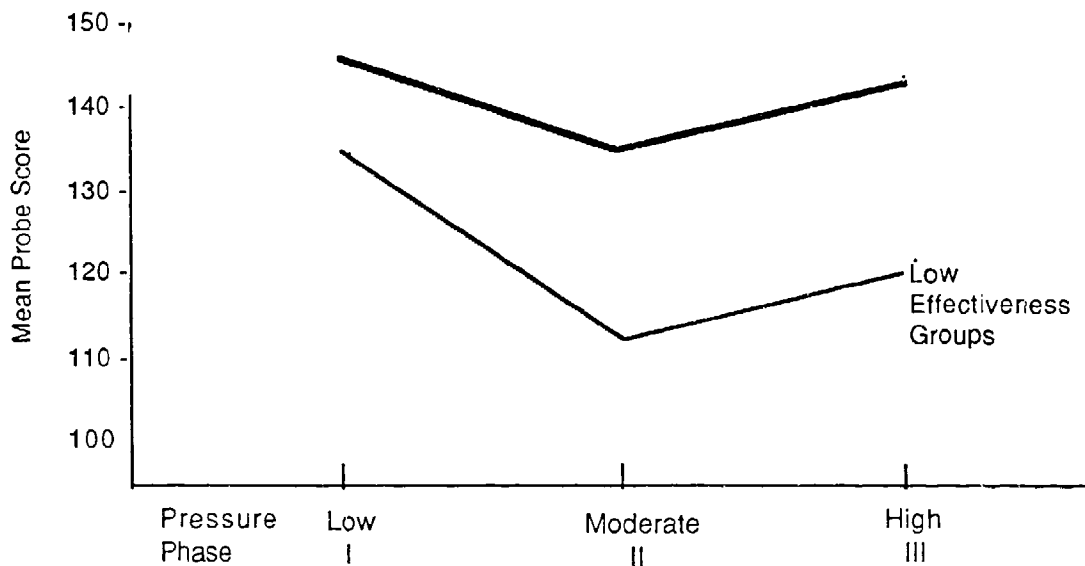


Figure V-3. Mean Probe Competence Scores for High and Low Effectiveness Groups Under Environmental Pressure

of recovery in Phase III was significantly different for the two groups. The similarities in the direction of pressure effects account for the finding of no interaction between groups and phases.

The degradation in Competence that occurred in Phase II for both High and Low Effectiveness groups was not due solely to the increase to moderate pressure. In addition, it illustrates a phenomenon that is common in complex organizations. It will be recalled that the beginning of Phase II was marked by a radical change in mission and, hence, in operations. During Phase I, the simulated task force had been engaged in routine patrolling operations. However, at the beginning of Phase II, the task force commander received a Fragmentary Order directing preparation and air assault into a new area of operations, where the unit was to establish blocking positions to deter a Viet Cong unit that was being driven by another task force. This assignment was a radical change from the routine activities to which Task Force 1-66 had become accustomed during the initial operational phase. This change, coupled with the increased pressure in Phase II, resulted in a deterioration in organizational processes.

The degradation in Organizational Competence (process performance) that resulted from a dramatic change in the task force's situation is typical of what happens in complex organizations unless the key members of the organization are trained to cope with such changes through maintaining the stability of organizational processes. In short, *radical changes or sudden dramatic pressures will result in major deterioration of process quality, unless key members, e.g., battle staffs, are trained to maintain processes under high levels of stress and the team has sufficient integration to resist the pressures.*

The data in Table V-8 and Figure V-3 show that Organizational Competence is affected both by change in environmental conditions and by pressure from the environment. *Thus, it is apparent that Competence is an important aspect of an organization's ability to flexibly and rapidly adapt to changes in its environments.*

Of special significance for understanding the relationships between pressure, Organizational Competence, and Combat Effectiveness are (a) differences in the gradients of Competence deterioration for High and Low groups between Phases I and II, and (b) differences in the amount of recovery in Phase III. These differences are clearly shown in Figure V-3. Throughout all phases, Competence for the High Effectiveness groups was significantly higher than for the Low Effectiveness groups. However, Competence did deteriorate for both groups during Phase II. On the other hand, for the High Effectiveness

groups, the degradation in Competence amounted to an average of 11.3 points per probe, whereas scores for Low Effectiveness groups decreased by 22.1 points. Obviously, the change in mission and operations and the increase in pressure that occurred in Phase II affected the process performance (Competence) of the Low groups much more than that of the High groups.

High Effectiveness groups recovered Competence in Phase III to within approximately three points of their original Phase I level, despite the extremely intensive High Pressure condition. On the other hand, Low Effectiveness groups never made much of a recovery. A modest increase in the Competence of these groups can be seen from Phase II to Phase III; however, this slight increase is not sufficient to be construed as a recovery. *Under high pressure, groups classified as "low" in Combat Effectiveness continued to function at greatly reduced levels of Competence and never again approached their original levels of performance.*

Three aspects seem to account for the reduced military performance of the Low Effectiveness groups:

- (1) Units classed as "Low" in Combat Effectiveness also performed at levels of Organizational Competence that were consistently lower throughout all pressure phases than those of the "High" groups.
- (2) When simulated units were faced with changes in mission and operations, Organizational Competence deteriorated much more for groups classed as "Low" in Combat Effectiveness than for those classed as "High."
- (3) When deterioration in Organizational Competence occurred because of changes in environments, units classed as "Low" in Combat Effectiveness could not recover previous levels of process performance (Competence) under increased pressure and, therefore, continued to function at greatly reduced levels.

The conceptual model described earlier in this chapter provides that one principal determinant of Combat Effectiveness is the quality of process performance, i.e., Organizational Competence. Since the model conceives that good military performance (Combat Effectiveness) results from, among other things, effective execution of certain critical organizational functions (Competence), the above results confirm clearly the causal relationship between Organizational Competence and Combat Effectiveness. The findings contribute to understanding of the influence of Competence upon Combat Effectiveness and the maintenance of Effectiveness under environmental change and pressure. When an organization maintains Competence at sufficiently high levels under pressure or as changes

occur in its environments, it is more likely to continue to perform its military operations effectively. If Competence deteriorates under pressure or in the face of change, Combat Effectiveness will be reduced also.

The capacity of an organization to adapt to rapid and drastic changes or increased pressure in its environment depends, in large part, upon its ability to adequately perform the organizational processes that comprise Competence. The quality of process performance is a major determinant of the adaptability of organizations.

Differential Effects. Table V-10 summarizes mean Probe Process Scores by phase for High and Low Effectiveness groups and shows the differential effects of pressure upon the five organizational processes that were correlated with Combat Effectiveness. The principal difference between the groups was consistently lower process performance by the Low Effectiveness groups throughout all phases.

Table V-10. Process Performance of High and Low Effectiveness Groups Under Differing Degrees of Environmental Pressure^a

Organizational Process	Pressure Condition	High Effectiveness Groups		Low Effectiveness Groups	
		Mean (N = 5)	SD	Mean (N = 5)	SD
Sensing	Low	49.6	4.7	44.5	4.3
	Moderate	44.6	4.0	36.2	3.0
	High	51.8	4.1	43.0	3.0
Communicating Information	Low	34.2	3.6	31.6	2.6
	Moderate	29.5	3.7	26.5	4.9
	High	34.1	5.4	30.5	2.9
Decision Making	Low	25.5	5.9	22.3	2.4
	Moderate	23.3	3.1	19.7	2.9
	High	24.5	1.6	20.0	1.8
Communicating Implementation	Low	19.8	3.0	20.6	2.4
	Moderate	18.0	3.4	14.3	3.3
	High	15.1	1.7	13.0	1.9
Coping Actions	Low	16.0	1.2	16.9	2.1
	Moderate	18.5	3.7	16.8	4.1
	High	17.7	1.1	15.0	1.2

^a Scores are mean Probe Process Scores for each phase.

Both classes of groups manifested the same trends across phases for Sensing and Communicating Information. These processes deteriorated as a result of changes in mission and operations which were introduced in Phase II, but recovered under the high pressure of Phase III.

Greatest differentials in performance under pressure occurred in Decision Making, Communicating Implementation, and Coping Actions. Whereas Decision Making in High Effectiveness groups deteriorated somewhat during Phase II, it recovered in Phase III. On the other hand, after reduction in quality of Decision Making, Low Effectiveness groups continued at this reduced level under the intense pressure of Phase III.

For both High and Low groups, Communicating Implementation showed the most effect of pressure. In both groups, performance on this process consistently deteriorated as pressure increased. However, the rate of deterioration was greater for Low Effectiveness groups during Phase II, and the downward trend continued in Phase III.

Communicating Implementation is concerned with messages between original decision makers and the individuals who must ultimately execute actions evolving from the decisions. This process includes messages relayed by third parties (e.g., Operations Officers) between the original decision maker (e.g., a Task Force Commander) and the executing individual (e.g., a Company Commander, Platoon Leader, or Squad Leader). Such linking communications may involve several individuals in a chain of organizational levels. Communicating Implementation also includes the innumerable communications of discussion or interpretation wherein organization members may attempt (1) to obtain or give clarification or elaboration of orders or instructions, or (2) through discussion, attempt to interpret orders or instructions so that their implications may be clarified.

The data show that, as pressure increased, the quality of Communicating Implementation deteriorated. This effect is important because individuals who execute organizational actions must receive accurate and complete instructions and they must understand the orders or instructions, if they are to effectively implement the decisions made by others. If decisions and their implementing instructions are vague or become distorted under the stress of environmental pressure, individuals responsible for implementation can never correctly carry out the intent of decision makers.

It is also important to note that, as communications for implementation move downward through the chain of command, the probability for distortion increases geometrically with each additional link through which a message must move. Accordingly,

potential for distortion or error is greater when execution of tactical concepts and decisions must depend upon passage through several levels in the chain of command. Potential for error or distortion is great, even though the principles of mission-type orders and command latitude within designated areas of responsibility are made fully operational.

It is especially noteworthy that groups classed as High in Combat Effectiveness improved the quality of their Coping Actions (execution) under increased pressure. Coping Actions deteriorated for Low groups. The improvement for High groups occurred despite the previously noted deterioration in Communicating Implementation.

This apparent paradox is explained by a very important finding in FORGE that is not shown in the tables displayed in this report. The finding is that, under increased pressure, company commanders in the High Effectiveness units made many more decisions and took many more actions on their own initiative without referring problems to the task force headquarters, thereby reducing the possibility of distortion and errors in communication and in actions. The result was better actions. On the other hand, company commanders in Low Groups more often continued, under pressure, to refer most decisions to higher levels and, accordingly, placed a much greater load upon both communication channels and the decision-making capabilities of higher level personnel. This appears to have resulted in command overload, with both delayed and incorrect actions resulting.

The question can be raised as to why company commanders in some simulated units took less initiative and referred more tactical decisions to higher levels, whereas, those in other units consistently took the initiative and made such decisions without referral to higher levels. The data do not clearly reflect the answer; however, some observations made by project personnel during the exercises provide some insight.

It appears that quite early in the simulations, command environments were created in some units such that referral of most decisions to task force headquarters was deemed to be desirable by company commanders in those units. In other units, command environments were created such that initiative and decisions at lowest command levels was deemed desirable.

Stated more simply, it was observed that some task force commanders early (during situation briefings and the first operational phase) made it clear to subordinates that decisions were to be referred to task force headquarters and contemplated actions must be cleared prior to execution. In short, in these battalions, close command supervision was established early and was vigorously enforced. The upshot was that subordinates learned

early to comply; however, as pressure increased and problems in the field multiplied, company commanders continued to push decisions up according to the guidance that was previously established. Because of the resulting overload on task force command and staff, delayed or aborted decisions became common and, accordingly, actions of maneuver units became less effective.

In contrast, in battle staffs where delegation of decision making and command latitude within clearly defined limits were established early, company commanders took more responsibility for decisions as pressure increased and, what is more, the quality of decisions and resulting actions became better. In this way, the more effective task forces were able to continue functioning well even under severe stress.

Aborted Decisions. In any complex organization, where many decisions are made at high and middle levels but must be implemented at lower ones, numerous opportunities exist for breakdowns to occur between the point of decision and the point of intended execution. When a breakdown in organizational communication processes occurs, a decision may never be implemented as intended. Such "aborted" decisions can have serious consequences for effectiveness.

In Project FORGE, "*aborted decisions*" were defined as those *completed decisions that were communicated to someone for action but upon which no action was taken*. The FORGE coding system permitted identification of all decisions for which actions occurred and all decisions for which no actions could be traced. "Aborted decisions" were those for which no implementing actions could be traced.

Figure V-4 shows the effects of pressure upon the abortion of decisions by the five High Effectiveness and the five Low Effectiveness groups. It is clear that, throughout the simulation, the Low groups aborted more decisions in each phase than the High groups. However, of special significance is the large increase in decisions aborted by the less effective groups under the very high pressure conditions of Phase III. Whereas mean aborted decisions in Phase II were 2.8 and 4.2 for the High and Low Effectiveness groups respectively. High groups had 3.2 incomplete decisions in Phase III, an increase of only .4 decisions, but Low groups aborted an average of 11.8 decisions, an increase of 7.6 per group. Figure V-4 illustrates a clear-cut example of how organizational functioning deteriorates under pressure, and of how such functioning may completely break down in some battle staffs, thus resulting in poor combat-relevant performance.

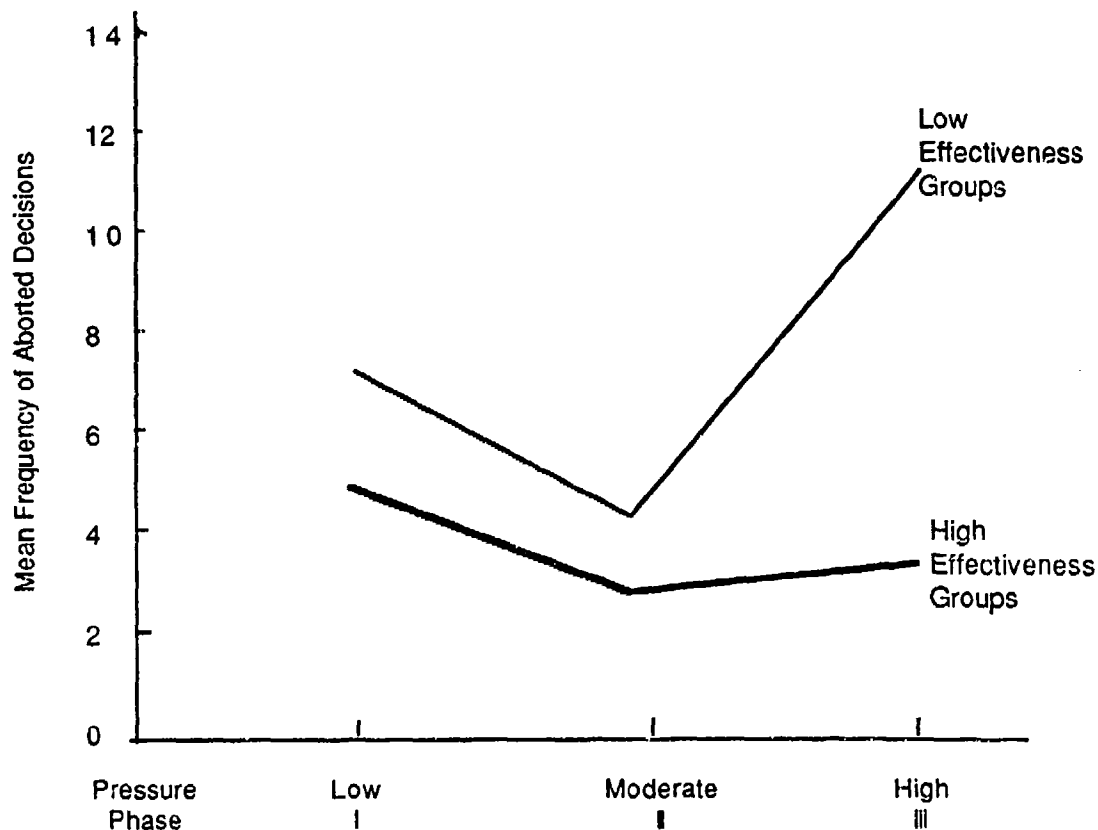


Figure V-4. Aborted Decisions of High Effectiveness and Low Effectiveness Groups

The findings indicate a probable major cause of reduced effectiveness in combat organizations. Even though tactical decisions and plans may be of the best, when a unit cannot maintain all of its other adapting processes (Communicating Implementation, Coping Actions) under pressure, problems for which a commander has developed solutions may never be overcome. In short, it is not sufficient that a commander and his staff be good decision makers. If the entire battle staff, as well as the entire unit, has not been trained to be sensitive to and carry out all critical organizational functions (processes), the greatest tactical decisions may not be executed. At least, adequate performance of all processes is necessary in order for effectiveness to be achieved.

The findings with respect to the differential effects of combat pressure provide considerable understanding of reasons why the effectiveness of many organizations is reduced when radical changes occur in their environments and when environmental

pressures increase. For some units, a major effect of change and pressure is a deterioration in the performance of critical organizational processes, which, in turn, results in reduced effectiveness in mastering operational problems. Although all processes are affected by change and pressure, those processes concerned with Adaptability (Decision Making, Communicating Implementation, and Coping Actions) seem to be more susceptible to deterioration and the effects are more lasting.

Not all organizations are equally susceptible to change and pressure. For some, process deterioration is minor and temporary, and recovery is rapid. These units are usually more combat effective. For others, deterioration in process performance is marked, the deterioration continues with continued pressure, and reduced combat effectiveness persists.

5. Conclusions from Project FORGE

The results of Project FORGE permit the following conclusions:

- (1) The Competence Model used in this study is a valid and practical means for analyzing and understanding the internal functioning of military organizations.
- (2) Organizational Competence is a principal determinant of the combat effectiveness of military units.
- (3) Organizational Competence is concerned with the quality of a unit's organizational processes. The frequency with which such processes are performed is not related to effectiveness--provided that each process is performed at least to some extent.
- (4) When the processes of which Organizational Competence is comprised are performed proficiently, an organization will be more combat effective. When the processes are not performed proficiently, effectiveness will be reduced.
- (5) The organizational processes that comprise Competence contribute differentially to effectiveness; however, most contribute in significant degrees and the causal linkage between the processes makes it essential that all be performed proficiently.
- (6) The ability of an organization to respond flexibly to changes in its operational environments is related to its Organizational Competence.
- (7) The ability of an organization to maintain effectiveness under pressure from its environments is related to its Organizational Competence.

6. Project Cardinal Point²

Project FORGE confirmed the validity of the Competence model as a viable approach for understanding the performance of complex combat units through analysis of the functioning of their battle staffs. However, two weaknesses in the study were:

- (1) A tightly controlled, scenario-based laboratory simulation was used as the research vehicle. Although this method was perfectly legitimate for an initial study of such complex phenomena, there still existed questions as to whether battle staff performance would be similar under field conditions.
- (2) *Ad hoc* groups were used in the study. Accordingly, some nagging doubt always remained as to whether existing battle staffs, which have been formed within units and have worked together over time, would produce results similar to the groups in Project FORGE.

For these and some other reasons of credibility, it was deemed desirable to test the model with operating battle staffs under realistic field conditions insofar as possible. Furthermore, as a step toward utilization of the FORGE results, it was considered desirable to determine whether the Competence model could be used meaningfully to train and improve the performance of battle staffs.

Accordingly, Project Cardinal Point was devoted to two main objectives:

- (1) Verify the relationship between combat outcomes of battle simulations and the process performance (Organizational Competence) of battalion battle staffs in such simulations.
- (2) Determine the feasibility of training military personnel to observe, assess, and feed back assessments of the process performance of battle staffs while they participate in battle simulations or field exercises.

a. Method

All data were collected in association with Cardinal Point II, a large training exercise conducted by the 8th Infantry Division in Europe during July and August 1978. Research personnel from HumRRO and the U.S. Army Research Institute for the Behavioral and Social Sciences (ARI) were guests of the 8th Division and full support and

² A fully detailed description of Project Cardinal Point appears in the following publication: Olmstead, J.A., Elder, B.L., and Forsyth, J.M. *Organizational Process and Combat Readiness: Feasibility of Training Organizational Effectiveness Staff Officers to Assess Command Group Performance*, Interim Report IR-ED-78-13, Human Resources Research Organization, Alexandria, Va., October 1978. The material in this section is an abbreviated version and adaptation of the original report.

cooperation were provided by the Division. However, the exercises were conducted for training purposes and data collection activities were secondary and adapted to the primary purposes of the Division.

For each battalion, Cardinal Point II was an 11-day exercise consisting of a combination of Field Training Exercise (FTX), battle simulation (PEGASUS), and live firing. The data presented here were collected during participation of battalion battle staffs in the battle simulation phase of Cardinal Point II.

PEGASUS was the vehicle used in the battle simulation phase, during which focus was on the battle staffs while they engaged in controlling and coordinating operations. PEGASUS is a two-sided, free-play, manual battalion simulation which makes possible a training situation in which a battalion command group interacts with controllers playing superior unit levels and "board controllers" playing friendly unit company commanders. In Cardinal Point II, actual company commanders of each participating battalion served as friendly board controllers.

The exercise was planned and directed by an Exercise Director. Activities of controllers were supervised by a Chief Controller. PEGASUS permits use of an enlarged map of any terrain upon which to depict disposition and movement of forces. Friendly board controllers (company commanders) maneuver their units according to instructions from the battalion command group so as to engage in combat with opposing force (OPFOR) units maneuvered by OPFOR controllers. In Cardinal Point II, OPFOR controllers were 8th Division intelligence officers who were specially trained and indoctrinated in PEGASUS procedures as well as in the tactics of potential opposing forces.

Engagement outcomes are computed by use of combat results tables provided specifically for use with PEGASUS. Play is activated by an operations order issued by Brigade Commander. In the order, a mission is assigned and typical intelligence and other information is provided. Initial friendly and OPFOR unit strengths may be varied, according to the training plan and, therefore, differing force ratios may be played. Thus, PEGASUS is a flexible, two-sided free-play battle simulation which provides dynamic and realistic opportunities for battle staffs to exercise and practice required command and control activities.

In the PEGASUS phase of Cardinal Point II, each participating battalion constituted a task force operating in coordination with another player battalion task force under the

command and control of a brigade headquarters. The brigade commander served as Chief Controller and Chief Evaluator, as well as PEGASUS brigade commander.

During one iteration, two battalion task forces conducted simulated combat operations in adjacent lanes of the 8th Division training area. Battalion task force command posts (CP) were located on the actual terrain in the respective lanes, while subordinate unit operations, conducted by company commanders of the battalion, took place on game boards (depicting the actual terrain) in a central location at the training area headquarters. Communication was by conventional radio nets.

The task force CPs displaced as dictated in the operational plans or by the tactical situation. Periodically, company commanders traveled forward to the task force CPs to receive orders, conduct reconnaissance, or take part in critiques conducted by evaluators.

During the 2-month duration of Cardinal Point II, seven iterations of the PEGASUS exercise were conducted. In five iterations, two battalions participated simultaneously. In two iterations, only one battalion participated at a time. Thus, a total of 12 battalions participated.

Each iteration required 4 days to complete. Participation of the battle staffs was continuous, day and night, during each 4-day period. Within that period, four modules were completed with each module consisting of one or more types of combat operations. Within each module, the sequence of activities was as follows:

- (1) Warning order from Brigade.
- (2) Fragmentary order from Brigade.
- (3) Task Force orders, terrain reconnaissance.
- (4) Battle simulation (approximately 6 hours).
- (5) Critique.
- (6) Warning order from Brigade for next module.

With minor deviations, the types of combat operations covered by the respective modules were the same for all units. Similarly, the sequence in which the operations were executed were the same. On the other hand, specific events within a module varied considerably between units because PEGASUS is a free-play simulation and OPFOR players were free to insert special problems, e.g., chemical and nuclear play or communications jamming, as deemed useful for training purposes.

Process Performance: Observation and Feedback. Two Organizational Effectiveness Staff Officers (OESO) assigned to the 8th Division participated in the battle simulation phase of Cardinal Point II. Throughout each iteration of the battle simulation, one OESO was stationed in each battalion Tactical Operations Center (TOC). The OESO systematically observed the activities of battle staff members as they proceeded to plan and supervise execution of each operation. OESO observations were addressed to identification and assessment of the quality of performance of the various organizational processes by the battle staff. Focus of the observations were the questions, "What process is occurring? How well is it being performed? How could it have been performed better?"

An OESO remained with a command group continuously throughout the 4-module cycle of the battalion's participation in the battle simulation. Upon completion of each module, the OESO rated performance of the battle staff on each Competence process according to scales developed for that purpose.

Then, the OESO met with the battalion commander and reported the results of his observations. Results of the ratings were not discussed because the ratings were conducted solely for research purposes. Rather, discussions between OESOs and commanders took the form of informal feedback sessions in which the OESO reported his observations and the two individuals discussed implications for the functioning of battle staff. This procedure of prompt "feedback" to the commander enabled him to obtain immediate assessment of the quality of process performance within the battle staff and, if deemed advisable by him, afforded the opportunity to make on-the-spot adjustments in procedures, policies, and behavior of members of the battle staff. In many instances, at the commander's discretion, OESOs also reported results of observations to all command group members and assisted in analyses of ways process performance could be improved.

Thus, an OESO served as "eyes and ears" of a commander with respect to the quality of performance of organizational processes within the battle staff and provided a mechanism through which on-the-spot feedback could be made available to the commander and members of the battle staff. In addition, OESO ratings of process performance were one major source of data for this study.

Prior to the beginning of the battle simulation phase of Cardinal Point II, HumRRO staff members devoted 2 days to intensive training of OESOs to observe and assess process performance of battle staffs. It is important to note that both OESOs were combat-arms officers, with experience in battalion staff activities. These qualifications and experience,

coupled with their OESO training, made observation more meaningful and made translation and application of the conceptual model more credible and decidedly more effective.

7. Data

Data were collected on 12 battalion battle staffs. Included were seven Mechanized Infantry and five Armor battalions. Following completion of each module, OESOs rated process performance and OPFOR controllers rated combat effectiveness of the battalions. Thus, for each battalion, there were available four ratings on Organizational Competence (one for each module) and four on Combat Effectiveness.

OPFOR controllers varied their inputs depending upon the tactical situation. In addition, different types of operation (e.g., attack, hasty defense) were judged to vary in terms of difficulty. To obtain some indication of relative difficulty of the four modules, the Chief Controller and the Chief OPFOR controller rated difficulty of each module for each unit on a five-point scale. Mean ratings across units were computed to obtain an index of difficulty for each module.

Process Performance Ratings. After completion of each module, the OESO assigned to the battalion completed a process rating form. The form contained seven items, one for each organizational process, upon which the OESO rated the performance of the battle staff. Raters used a four-point scale, which was chosen because it was found in Project FORGE that assessors of process performance encountered difficulty in discriminating quality of performance when scales of more than four points were used.

For each battalion, the OESO ratings of performance of one process constituted a Module Process Score, with a possible score range of 1 to 4. Thus, for an exercise (four modules), a unit could receive for each organizational process a sum of four module scores, thereby producing Exercise Process Scores with a minimum score of 4 and a maximum score of 16. Scores for Organizational Competence were computed as sums of the seven Process Scores. For a module, the minimum possible Competence Score was 7 and maximum was 28. For an exercise, battalion Competence Scores could range from 28 to 112.

Combat Effectiveness Scores. Upon completion of each module, OPFOR Controllers completed a Controller Rating Form. It will be recalled that, in most instances, two battalions participated in tandem. Thus, two PEGASUS simulations were conducted

simultaneously, one for each of two battalions, with the battalions participating in the roles of adjacent task forces under the direction of a single brigade commander. For each battalion, a team of three OPFOR board controllers conducted play of enemy operations. A Chief OPFOR Controller supervised the activities of the two OPFOR teams. All members of each team of OPFOR Controllers completed the Controller Rating Form for respective battalions for which they served as Controllers. The Chief OPFOR Controller rated both battalions. Thus, for each battalion, ratings of four controllers were collected.

Two items of the Controller Rating Form provided data for development of an index of combat effectiveness. The problem was to develop a procedure which would make it possible to order participating battalions in terms of overall combat effectiveness. An adaptation of a procedure previously used by the author for assessing battle simulation outcomes of brigades (Olmstead, Baranick, and Elder, 1978) was used to develop the index of combat effectiveness.

Following earlier work by Tiede and Leake (1971), there were identified two dimensions which define the mission space of a unit. The two dimensions are:

- (1) Area--the area or geographical objectives controlled by the unit in accomplishing the mission or during the engagement.
- (2) Resources--the quantity (percent) of resources (personnel, weapons, equipment) remaining at the end of the engagement in terms of future performance capabilities.

Appropriate combinations of indicators of these two dimensions make it possible to order participating units in terms of outcomes. For Project Cardinal Point, the procedure consisted of operationally defining anchor points on five-point scales for Area and Resources. Using the two scales, a 5×5 matrix was constructed, each cell of which represented a possible outcome in terms of combinations of the two dimensions.

For each battalion, module mean OPFOR Controller ratings were computed for the two scales. To obtain an index which represented a combined Resources and Area outcome, module mean ratings for the two scales for each battalion were added. The sum of these two ratings were designated the Combat Effectiveness Score. The result was a distribution of 12 battalion scores for each module, with a possible range of 2 to 10 for a module.

8. Results

Quantitative Data were available from OESO ratings of battle staff process performance and OPFOR Controller ratings of combat outcomes of PEGASUS battle simulations. For each battalion, total scores for the exercise and scores for each of the four modules comprising the exercise were obtained. Table V-11 shows summary data for the seven organizational processes, Organizational Competence (sum of the process scores), and Combat Effectiveness.

Table V-11. Summary Data for Process Performance and Combat Effectiveness--Cardinal Point

Variable	Module a, b								Exercise (Sum of Module Scores)	
	1 (2.45)		2 (3.54)		3 (4.25)		4 (3.17)			
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Sensing	2.25	.75	3.08	.52	3.25	.62	3.67	.49	12.25	1.48
Communicating Information	1.83	.96	2.75	.62	3.17	.58	3.58	.69	11.33	2.06
Decision Making	3.58	.51	3.75	.45	3.67	.49	4.00	.00	15.00	1.34
Stabilizing	3.08	1.31	3.25	.97	3.33	.89	3.42	.90	13.08	3.70
Communicating Implementation	3.42	.78	3.58	.52	3.41	.69	3.67	.49	14.08	1.92
Coping Actions	3.33	.79	3.50	.52	3.58	.52	3.58	.52	14.00	2.13
Feedback	2.00	.74	2.67	.65	3.17	.84	3.42	.52	11.25	2.13
Organizational Competence	18.91	2.96	22.25	3.54	25.50	3.52	25.25	2.83	89.91	11.60
Combat Effectiveness	4.72	1.00	5.62	1.00	5.79	1.65	6.13	1.04	21.25	3.10

a Numbers in parentheses following module designations are difficulty ratings, maximum difficulty = 5.00.

b Possible score ranges:

Processes	Module	Exercise
Competence	1-4	4-16
Combat Effectiveness	7-28	28-112
	2-10	8-40

Process Performance and Combat Outcomes. Spearman Rank Order correlation was computed between unit Organizational Competence and Combat Effectiveness Scores for the exercise. This statistic provides an index of the relationship between process performance and combat outcomes across the four modules of the exercise. For this relationship, Rho was .71 ($p < .01$, one-tailed test). Thus, a significant and strong relationship was found between battalion battle staff performance of organizational processes and combat outcomes of battle simulations. *When the process performance of battle staffs was better, combat outcomes of the battalions were better also. When the process performance of battle staffs was less effective, combat outcomes were lower.*

The distribution of battalion Combat Effectiveness scores was split at the median and the six highest and six lowest battalions were grouped separately. For the six highest battalions, mean Combat Effectiveness was 23.83 with standard deviation of 1.71. For the six lowest, mean Combat Effectiveness was 18.66 with standard deviation of 1.50. The difference in Combat Effectiveness between the two groups was significant ($t = 5.57$, $p < .01$).

Mean process scores were computed for each group. A comparison of process performance of more and less "combat effective" battalions is shown in Table V-12.³ From this table, it is evident that process performance of battle staffs of units with the more favorable combat outcomes was uniformly superior to that of battle staffs in units with less favorable combat outcomes. Differences between the two groups were significant for all processes and for Organizational Competence.

The correlation between Organizational Competence and Combat Effectiveness scores and the differences in process performance between more and less "effective" battalions indicate a strong relationship between combat outcomes, as reflected in battle simulations, and the quality of the organizational processes that occur within a battle staff.

Impact of Process Feedback. The OESOs reported to and discussed their process observations with battalion commanders following completion of each module. An important question is concerned with the impact of that "feedback" upon the process performance of the battle staffs.

³ Comparisons are solely within the group of units on which data were collected and comparisons of "more" and "less" effective units carry no implications for the actual combat readiness or effectiveness of the units involved.

Table V-12. Comparison of Process Performance of More and Less Combat-Effective Battalions--Cardinal Point^a

Process	More Effective Battalions		Less Effective Battalions		<i>t</i>	<i>p</i> ^b
	Mean	SD	Mean	SD		
Sensing	12.80	1.55	11.40	1.14	1.96	<.05
Communicating Information	12.67	1.97	10.00	1.09	2.90	<.01
Decision Making	15.83	.41	14.17	1.47	2.67	<.05
Stabilizing	15.33	1.63	10.83	3.92	2.59	<.05
Communicating Implementation	15.33	1.21	12.83	1.72	2.91	<.01
Coping Actions	15.33	1.63	12.67	1.75	2.73	<.05
Feedback	12.83	1.47	9.67	1.37	3.86	<.01
Organizational Competence (Total Process Scores)	99.33	6.72	60.50	5.96	5.05	<.01

^a Scores shown are exercise (4 modules) means.

^b One-tailed test.

The impact of feedback was evaluated by comparing Organizational Competence scores for the four modules (Table V-11). Table V-13 summarizes the results of a simple one-way analysis of variance used to test the effects of modules.

Table V-13. Analysis of Variance for Effects of Modules Upon Process Performance--Cardinal Point

Source	SS	MS	F	p
Total	717.98			
Modules	257.56	85.85	8.20	<.01
Error	460.42	10.46		

Module effects were significant. Table V-14 shows *t* statistics for differences between module means for Organizational Competence. All differences were significant.

**Table V-14. Paired t Statistics for Module Differences
in Organizational Competence--
Cardinal Point**

Module	Module ^a			
	1	2	3	4
1	—	3.98	7.69	7.82
2		—	2.09	5.32
3			—	3.02
4				—

^a Degrees of freedom = 11; $p < .05 = 1.796$,
 $p < .01 = 2.718$ for one-tailed tests.

From Table V-11, it can be seen that mean process performance (Organizational Competence) increased throughout the exercise and Table V-14 shows that differences between all modules were significant, indicating that OESO feedback exerted positive effects upon the process performance of battle staffs. It is recognized that the possibility of simple practice effects was not controlled; however, the facts that the tactical operations conducted in each module were different and the modules differed in level of difficulty suggest that the contribution of practice to increased process performance would be minimal. Since process performance improved significantly in each succeeding module, it is concluded that main sources of the improvement were the changes and learning which resulted from the feedback provided by the OESOs.

Of particular interest are the differences between Modules 1 and 2 and 1 and 4 (Table V-11). Performance in Module 1 occurred prior to any feedback or discussion of organizational processes. Accordingly, scores for the first module constitute baseline data against which scores for the succeeding modules can be compared.

Differences between performance in Modules 1 and 2 provide the most clear-cut demonstration of the impact of feedback. The mean improvement of 3.34 points for Module 2 is the largest increase between any of the modules and suggests that the initial feedback exerted the greatest impact upon process performance. However, continuing

increase in succeeding modules suggests cumulative effects result from repeated occurrences of feedback.

From Module 1 to Module 4, process performance improved an average of 6.34 points per battle staff. Least improvement was three points for a unit which, because of a high initial score, had only a small margin for improvement. Greatest improvement for a unit was 13 points. Process performance of all battle staffs improved across the four modules.

Interviews with the two OESOs revealed that, although some battalion commanders had initial reservations about the potential value of process feedback, most commanders rapidly perceived its utility and used the information provided to make on-the-spot adjustments in staff procedures, role relationships, and even leadership styles during the course of the exercises. OESOs cited numerous instances of constructive changes initiated by the commanders and of improved coordination and teamwork, with resulting improvements in overall battle staff performance.

In view of the above findings, it was concluded that OESO feedback of process observations had a significant, positive impact upon performance of the organizational processes and that these observations and subsequent feedback to unit commanders contributed substantially to improved combat outcomes of the battle simulations.

9. Conclusions from Project Cardinal Point

The results of the research conducted in Project Cardinal Point warranted the following conclusions:

- (1) The results verify the findings of Project FORGE, and therefore, validate the Competence Model of battle staff performance.
- (2) Organizational Competence (the quality of battle staff process performance) is a principal determinant of unit combat effectiveness.
- (3) Feedback of process observations by trained combat arms personnel during field training exercises exerts positive impacts upon the effectiveness of battle staffs.
- (4) It is feasible to train battle staffs to improve their performances of the critical organizational processes that contribute to combat effectiveness.

One weakness of Project FORGE was that *ad hoc* groups were used to form the battle staffs that were studied. Another weakness was that, in FORGE, the battle staffs

performed in a fully simulated situation, i.e., they were not in the field. In Project Cardinal Point, participants were actual battalion battle staffs engaged in the conduct of simulated combat operations under field conditions. Since the results for Project Cardinal Point were remarkably similar to those of Project FORGE, it can be concluded with confidence that the processes encompassed by Organizational Competence are important contributors to unit combat performance. To the extent that the command and control system of a unit influences the performance of that unit, to that extent organizational processes are determinants of unit performance.

D. IMPLICATIONS

Organizational Competence is the adequacy with which an organization performs certain critical processes, or functions. When the processes are performed adequately, they assist an organization to be effective. When handled poorly, they may negate many positive effects contributed by proficiency in other areas of activity.

In two additional HumRRO studies not described here, Organizational Competence was evaluated in organizations vastly different from military combat units. Survey techniques were used to evaluate Competence in 31 social service and rehabilitation agencies nationwide (Olmstead and Christensen, 1973) and in 17 public welfare agencies in nine states (Olmstead, Christensen, Salter, and Lackey, 1975). In both studies, very strong relationships were found between agency effectiveness and (1) Organizational Competence, (2) each of the components of Competence, and (3) each organizational process. Agency effectiveness was measured in terms of agency productivity and judged quality of agency performance.

Taken together, the two military studies and the two studies of civilian agencies demonstrated that the Competence Model is generally applicable to all types of organizations.

The results of the studies described in this chapter confirm the validity of the Competence Model as a viable approach for analyzing and understanding the performance of complex organizations. The principal contribution of the studies is concrete demonstration of the following:

- (1) The importance of the processes subsumed under Organizational Competence as determinants of the effectiveness of organizations.
- (2) The relative contributions to effectiveness of the various organizational processes.

- (3) The systematic relationships that exist among the processes.
- (4) The ways in which change and pressure influence performance of the organizational processes.

The studies described in this chapter also reinforce the concept that Organizational Competence is a system attribute. That is, organizational processes must be performed well by all members of a battle staff. Ideally, the processes take the form of coordinated activities which bring information, decisions, and actions from many sources into conjunction through a complex interplay between positions and between organizational levels. Through such interplay, the various activities of the battle staff are integrated and, thus, produce the unified action required of an effective combat unit.

Accordingly, maximum unit effectiveness can be expected only when personnel at all levels of a battle staff are (1) equally proficient in performance of the organizational processes, and (2) their separate activities are integrated into a unified system of decision and action. In short, *Organizational Competence involves two elements: (1) proficiency of all individuals in process performance, and (2) teamwork among all levels so that performance of organizational processes by individuals is fully coordinated.*

It is apparent that Organizational Competence plays a principal and critical role in the performance of organizations and, accordingly, warrants major attention in efforts to improve effectiveness. It is also apparent that the findings and concepts discussed in this chapter have considerable potential utility for the improvement of combat readiness in operational military units.

The main values of the Competence Model are that it offers the following:

- (1) A systematic way of thinking about some otherwise exceedingly slippery organizational functions.
- (2) A workable framework for the assessment and diagnosis of battle staff functioning and for the correction or improvement of dysfunctional elements in a battle staff.
- (3) A meaningful and workable foundation for both individual and unit training in organizational process performance.

The processes associated with Organizational Competence can be operationally defined. Once made operational, the Competence Model provides concrete bases for (1) the assessment and (2) the improvement of battle staff functioning. Recommended procedures for assessment, diagnosis, and training will be described in later chapters of this report.

VI. A MODEL FOR BATTLE STAFF INTEGRATION

In the conceptual framework for battle staff effectiveness (Chapter V), proficient role performance and battle staff integration were proposed as essential elements for developing and maintaining Organizational Competence. In Chapter VI, an operational model for Competence was proposed and field tests of the Competence Model were reported. From results of the tests, it was concluded that Organizational Competence, i.e., the caliber of a unit's critical organizational processes, is an important determinant of battle staff effectiveness. Effectiveness in performing the organizational processes results, in part, from proficiency in role performance.

In this chapter, that part of the conceptual framework pertaining to integration will be reduced to an operational model. Since there have been no tests of the Integration Model, it will be evaluated for general feasibility in battle staff training and development.

A. ASSESSMENT OF TRAINING AND DEVELOPMENT MODELS

Operational models serve utilitarian requirements. They are developed for the purpose of specifying for potential users the essential elements in complex concepts and the relationships between the elements. Although based upon and similar to a "conceptual framework" (see Chapter V), a model is more utilitarian because it delineates the critical elements; shows their relationships; and, most important, presents them in a form which makes the elements and their relationships subject to verification and manipulation for the particular purpose for which the model was designed.

1. Attributes of a Practical Training and Development Model

A useful model for training and development should possess the following attributes:

- (1) *The Model should be parsimonious.*

Like all scientific concepts, operational models should be parsimonious. They should explain the most relationships with the least feasible number of elements. The rule of parsimony also applies to training and development models.

(2) *All elements should be manipulable.*

Each element in the model should be capable of being changed, i.e., improved, in some fashion, either through training, development, or intervention. It serves no purpose to include elements which cannot be operationally defined and, thus, cannot be improved through systematic efforts of the organization.

(3) *All elements should be capable of being measured.*

This capability enables trainers and commanders to assess the level of development of their units and to diagnose elements that may be especially strong or weak, and to which special efforts should be directed.

The Integration Model to be presented here should be evaluated in terms of the above criteria.

B. BATTLE STAFF INTEGRATION

Projects FORGE and Cardinal Point (Chapter VI) demonstrated the validity of an operational model of Organizational Competence. In particular, the relationships of Competence, and the processes of which it is composed, to combat effectiveness were demonstrated conclusively.

In addition, it was shown that battle staffs differ in (1) their proficiencies in performing organizational processes, and (2) their abilities to maintain such proficiency (Organizational Competence) under the pressures of combat. In this regard, two significant questions are, "What determines the quality of performance of critical organizational processes?" and "Why, under equal stresses of combat pressures, do these critical organizational functions (processes) deteriorate in some units and not in others?" The concept of "integration" is proposed as the answer to these questions.

As defined in Chapter V, *a battle staff is a role system driven and controlled by operational (task) demands and maintained by shared values and norms.* The "roles" of the system are the official positions occupied by members of the battle staff, together with both the formal duties and informal expectations associated with each position.

Members plan and supervise execution of a unit's operations through performance of the several organizational functions, or processes, subsumed under the rubric of Organizational Competence. The persons in the system were conceived as having various motivations and attitudes, and as performing certain activities (processes) in certain ways. The ways they perform the processes are, in part, determined by how the battle staff

members perceive the organization, other members, themselves, and their roles; in part, by their motivations; and, in part, by their skills in performing their roles and the processes dictated by role and operational demands.

In short, battle staff effectiveness is determined by:

- (1) The skills of each member in performing the various organizational processes dictated by operational and task demands, and
- (2) Battle staff integration--the extent to which the roles, perceptions, motivations, and activities of all battle staff members are integrated into a unified whole.

Integration is the force which melds the activities of battle staff members and it accomplishes this melding through norms and shared values of the members. Stated in more operational terms, *battle staff integration is the maintenance of structure and function under stress, and a state of relations among subunits that insures that coordination is maintained and the various subunits do not work at cross purposes.* "Subunits" may be either individual members of the battle staff or subordinate units of the battalion or task force.

It should be noted that both "the maintenance of structure and function under stress" and "a state of relations among subunits..." can be measured and, therefore, are manipulable, i.e., susceptible of development. Procedures for measurement and development will be described in later chapters.

Finally, *battle staff integration is a developmental process.* Integration develops within a group of people, starting from a mere collection of individuals with different perceptions, motivations, and attitudes, and developing into a team with common goals, attitudes, and values. These attributes cannot be installed with a single inoculation, but, rather, must be propagated over time. The state of integration at any point in time is partly dependent upon what has occurred between the members in the past. Therefore, *integration is also a process*, occurring over time, with its state at any point determined by the battle staff's own unique history.

In summary, the essential factors necessary for effective battle staff (team) performance are:

- (1) Proficiency in role and team skills by all members, both individually and collectively,
- (2) A continuing group situation that:
 - (a) Is attractive to members,

- (b) Generates pride and solidarity (cohesion), and
- (c) Produces strong group norms that value high team performance (integration).

C. THE INTEGRATION MODEL

Figure VI-1 shows a schematic of the Integration Model. Stated simply, the integration of a battle staff should occur (1) when organizational conditions are conducive to cohesion and teamwork, and (2) if developmental activities within the unit are designed to propagate high skill levels, stable team norms, and strong values for teamwork. When these two components are combined, the result will be an organizational state which encourages teamwork and provides a supportive climate that will enhance member capabilities for resisting pressure and for maintaining proficiency under the stress of combat.

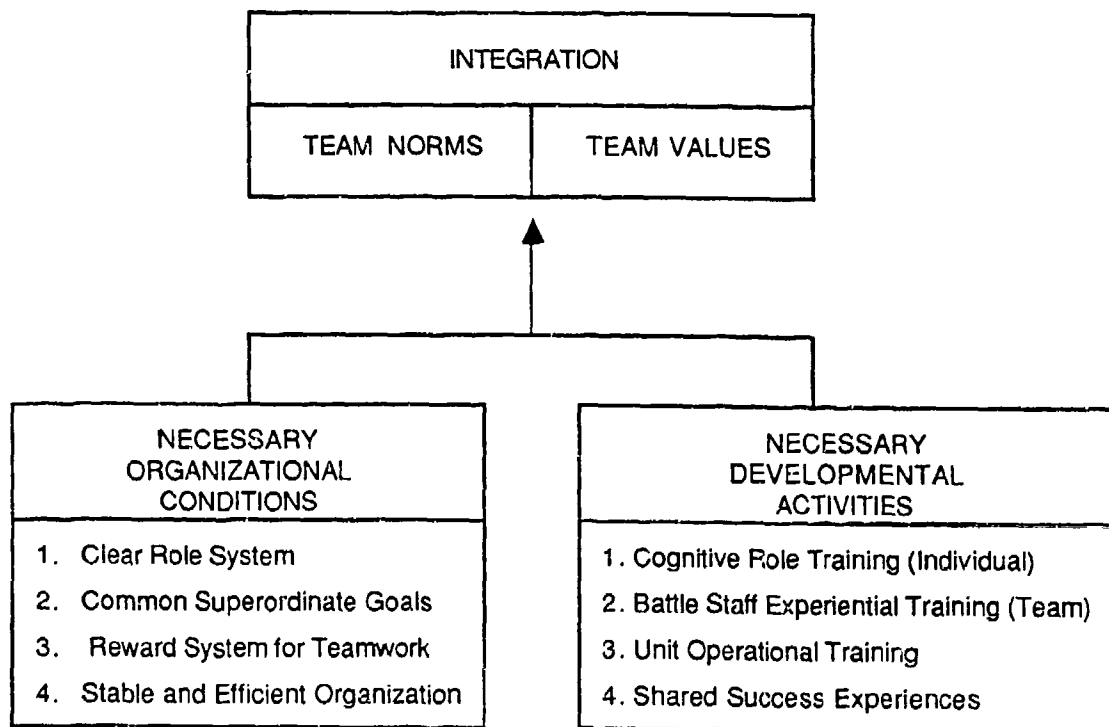


Figure VI-1. The Integration Model

1. Necessary Organizational Conditions

One requisite for the growth of battle staff integration involves organizational conditions that are conducive to cohesion and teamwork. "Organizational conditions" have

their sources in the actions of the organization or its representatives, and they are important aspects of the organizational context within which all personnel must perform.

The organizational context consists of those properties of an organization which reflect a unit's internal state and characteristic ways of working. In recent years, the importance of organizational contexts has become increasingly apparent. More and more, one finds in the literature such terms as "organizational culture," "company personality," and "psychological climate" to describe the overall context within which people work; more and more, research demonstrates that the environment within an organization exerts a major impact upon the attitudes, motivation, and performance of people who are members of that organization.

For this discussion of battle staff integration "necessary organizational conditions" are those elements which have particular relevance for cohesion and teamwork, and are deemed essential for the development of integration. Full rationales for the conditions shown in Figure VI-1 were presented in Chapter IV. The necessary organizational conditions are:

(1) *A clear system of roles within the battle staff*

Each member of the battle staff should know both his role and those of all other members. He should know clearly and accept the expectations other members have of him as well as his expectations of the performance of other members.

(2) *Common Superordinate Goals*

All members of the battle staff should know and accept the objectives of parent and high level units, e.g., battalion task force, brigade, division, and each should understand and accept how his role contributes to the accomplishment of superordinate objectives. In addition, unit goals and superordinate goals should be held in common by all battle staff personnel.

(3) *Reward System for Teamwork*

The system of rewards in a unit is an important determinant of teamwork. Although intangible rewards may be received from highly cohesive groups for efforts that contribute to team welfare and success, cooperation is most likely to develop and become a way of life when members can receive formal rewards for behaving cooperatively and when competitive behavior is not rewarded. The most significant factor is whether unit leaders value and reward cooperative team-centered behavior and all personnel know it.

(4) A Stable and Efficient Organizational System

Teamwork requires an efficient organizational system which provides a means through which activities of team members can be integrated and coordinated. Also required is sufficient stability among personnel within the battle staff that common values and norms can evolve.

Each necessary condition has its sources in actions of the organization or its representatives. That is, the condition develops as the result of some official action taken in the name of the organization or because of decisions or actions taken by organizational leaders. Thus, roles in a battle staff will be clear, understood, and accepted when a commander makes clear his expectations about how every role in the battle staff should be performed and insures that all role occupants clearly understand and accept his expectations. Similarly, clear superordinate goals require that leaders throughout the organization not only accept goals of the larger organization as their own but, in addition, make the effort to insure that all personnel both understand and accept the goals and their implications. Reward systems in units usually result from actions of commanders. Such actions may be either planned or inadvertent. That is, reward systems may develop because of conscious planning and concomitant actions by commanders, or they may develop informally and by accident. In either case, the kind of reward system, if any, that develops in a unit derives from the philosophy and actions of the commander. Finally, an efficient organizational system results from explicit command direction and emphasis, while a stable system results from (1) command efforts to minimize turbulence within the unit, and (2) continuity among battle staff personnel--which can only result from enlightened personnel policies that retain officers in units for periods that are sufficiently long for cohesion to develop.

Thus, it is clear that "organizational conditions conducive to teamwork and cohesion" are products of the organization and its leaders. Since the conditions are the products of unit leadership, they can be changed through the efforts of leaders--they are manipulable. Furthermore, each condition can be measured. They can be assessed through the use of personnel surveys, questionnaires that target the conditions, or other devices that are designed to assess the perceptions and attitudes of battle staff members about existing teamwork, cohesion, and organizational conditions.

2. Necessary Developmental Activities

Organizational conditions are part of the context within which battle staff personnel must perform. Necessary developmental activities are those training and development activities needed to equip battle staff members to function as members of a viable role-proficient and cohesive team.

The necessary developmental activities are:

(1) *Cognitive Role Training (Individual)*

In this training, primary focus is upon providing all battle staff members with (1) full cognitive understanding of performance requirements for each role; (2) detailed understanding of Organizational Competence and the definitions and performance requirements of each organizational process; and, most important, (3) recognition and understanding of the battle staff as a team, together with the requirements of teamwork in battle staffs.

(2) *Battle Staff Experiential Training (Team)*

This training follows Cognitive Role Training and should be designed to provide practical experience in battle staff functioning under carefully controlled conditions. It is analogous to the Army's "practical exercises," and should be conducted as practical team training for battle staffs separate from the remainder of their units. The training is characterized by objectives-based practical exercises, analyses of performance, and feedback of results.

(3) *Unit Operational Training*

All unit field training in operations should include observation, assessment, and feedback of battle staff functioning, especially with respect to Organizational Competence. In short, Competence training should be an integral part of unit operational training.

(4) *Shared Success Experiences*

As discussed in Chapters IV and V, an important requisite for the development of cohesion is shared experiences of success in matters of importance to the team. From the standpoint of planned battle staff development, systematic provision of successful experiential and operational training experiences is the method of choice. Procedures for providing success experiences during training will be discussed in detail in a later chapter.

The recommended developmental activities have been selected to maximize battle staff role performance, centered around Organizational Competence processes, and to develop cohesion and teamwork among members of the battle staff. When the developmental activities and other daily unit activities are conducted within an organizational

context characterized by the conditions described above, it can be expected that battle staff integration, and, therefore, battle staff effectiveness will be maximized.

3. Assessment Issues

Any proposed model should be tested in the context for which it is designed. The Competence Model has been tested with battle staffs (Chapter VI) and can be accepted as valid. Although backed by strong research in other contexts (see Chapter IV), the Integration Model has not been tested with battle staffs. At this point, therefore, the Integration can be assessed only in terms of the criteria for training and development models discussed at the beginning of this chapter. Together with parsimony, the two criteria for a useful model were set forth as manipulability and measurability

a. Manipulability

First, the criterion of "manipulability" requires that each element in the model, as well as Battle Staff Integration itself, shall be susceptible of systematic change. Such change may be accomplished through development, training, or intervention.

It should be apparent that every element in the Integration Model meets the criterion of manipulability. Thus, each organizational condition can be improved through command intervention and is likely to deteriorate when not given proper command attention. As just one example, the first necessary organizational condition--a clear role system--requires that someone, probably the commander or another designated battle staff leader, explicitly define the commander's expectations for each role in the battle staff and, equally important, inculcate these expectations in the entire battle staff so that all members perceive the various roles in the same way. This is command intervention and, when used effectively, will produce improved perceptions of their roles by battle staff members, and, accordingly, will contribute to integration of the battle staff. Thus, the element--a clear role system--is manipulable through command intervention and meets the criterion for an element in a training and development model. Each necessary organizational condition meets the manipulability criterion in a similar fashion--all are subject to change through intervention.

The four necessary developmental activities are obviously manipulable because they involve training activities and, accordingly, can be easily changed by modifying training designs or methods. Each element can be enhanced by improved training design and methodology. In turn, enhancement of each "developmental activity" can be expected to

contribute to both improved role performance and strengthened norms and values characteristic of heightened integration.

b. Measurability

Measurability is important because, for any effort to improve performance or any other condition, it is necessary first to determine the current status of the individual, group, or unit. When the current status has been ascertained, it will be possible to plan efforts for change. Accordingly, measurability of the elements in any utilitarian model is essential to establish current status and to determine whether significant change has been achieved.

Viewed from another standpoint, anything that can be changed can be measured in some fashion. It is necessary to identify the units of change, and, then, count the units to determine whether significant change has occurred.

Measurement of developmental activities is relatively simple. For Cognitive Role Training, Battle Staff Experiential Training, and Unit Operational Training, measurement would involve conventional training evaluation procedures. Measurement of Shared Success Experiences can be accomplished through survey techniques designed to measure battle staff members' perceptions of both training experiences and significant events in the daily activities of the unit. The four necessary organizational conditions can be assessed through questionnaire surveys of battle staff personnel. Similarly, battle staff norms and values, as well as an overall assessment of integration can be accomplished with surveys of battle staff members. Suggested procedures for measurement of elements in the model will be discussed in detail in a later chapter.

4. Evaluation of the Integration Model

From the discussion in this chapter it should be clear that the Integration Model meets the general criteria for an operational model. The model is parsimonious and all of its elements, as well as the overall concept of Integration, are both manipulable and measurable. Therefore, it can be concluded that the model is feasible for training and development purposes.

However, a test of the model remains highly essential. Only through an actual field test can it be confirmed that the model, in fact, provides valid guidelines for development of battle staff integration.

Such a test would involve selection of one or more test units, exposure of battle staffs to the necessary organizational conditions and the necessary developmental activities, and periodic measurement of model elements, over a period of at least 6 months. If the test is conducted with the proper controls, it can be expected that the product will be a battle staff with both high levels of organizational competence and sufficient integration for the battle staff to be capable of resisting battlefield pressures .

VII. IMPLEMENTATION

Chapters VII through X are devoted to discussion of the many implications of Organizational Competence and Battle Staff Integration. Chapter VII is concerned with general implications for implementation of the concepts, i.e., how to make the concepts real so that they can be made applicable to the everyday functioning of a unit. Chapter VIII discusses the requirements for leaders. A special role for battalion or task force executive officers will be proposed.

In Chapter IX, procedures are discussed for improving battle staff process performance and integration. Particular emphasis is given to analyzing and assessing process performance in field operations and in improving process performance through both formal training and in-service operational development. In addition, some practical recommendations for developing battle staff integration will be presented.

Chapter X, the Conclusion of this report, includes a summary conceptual framework and some general thoughts about battle staff integration and competence.

A. IMPLICATIONS FOR IMPLEMENTATION

This chapter is concerned with some general implications for the concepts of Organizational Competence and Battle Staff Integration.

1. Military Units as Systems

This report has been concerned with Organizational Competence--the effective performance of essential organizational processes--as well as with Battle Staff Integration--the melding of battle staff structure and functions into unified roles and actions. Stated simply, "Organizational Competence" is merely a way of classifying, delineating, describing, and translating into practical terms, the organizational functions (processes) whose proper execution is critical for effective unit performance. "Function" is the general term for the natural activity of a person or thing that is required in order to accomplish its created or designated purpose. "Organizational" functions are those activities of an organization that must be performed if the organization is to effectively accomplish its purposes.

In discussions of open systems, functions are usually termed "processes" because the required activities change with changes in system circumstances, most occur over time, and they sometimes vary in the purposes they serve. The seven "processes" stipulated for Organizational Competence are actually essential functions that must be performed by any organization but are adapted and made specific for combat units. Evidence is clear that units which perform the processes well are also effective in their battlefield performance. When units do not perform the processes well, battlefield performance is impaired. Since each process is essential, the quality of performance of each is an important determinant of unit effectiveness.

Thus, Organizational Competence is concerned with the quality of performance by the command and control system of a combat unit. The command and control network serves as the brain and nervous system of a combat unit, acquiring information from various sources, collating all information, making decisions concerning actions to be taken, and sending appropriate instructions and directives to personnel who are in contact with opposing forces. The extent to which this system functions flexibly, efficiently, and effectively determines, in large part, the ability of the unit to accomplish its tactical objectives.

Competence depends upon skills of battle staff personnel in acquiring and interpreting information; making choices concerning to whom acquired information is to be communicated, as well as communicating accurately and completely; making decisions concerning ways to cope with unusual or unanticipated situations; and executing actions deriving from such decisions--all performed at high levels of proficiency and coordination. Some technological assists may be available, such as data-processing equipment, electronic surveillance equipment, and highly sophisticated communications devices; however, the payoff in Competence ultimately reduces to the judgments and actions of key personnel. Of equal importance, *performance of the processes is a team product and much of the quality of process performance depends upon teamwork and the coordination of separate responsibilities and activities.*

Accordingly, equal to the skills of individuals is what has been termed here as "the integration of structure and function." This means that the positions, roles, and functions that make up an organizational system must fit together and support each other in their respective activities. In short, integration of a battle staff, with the resulting teamwork, is essential. If integration of structure and function does not occur, missed signals, aborted decisions, overlooked intelligence, and activities at cross-purposes may be the result. In

the extreme, loss of integration may produce a collapse of essential functions, which can threaten survival of the unit.

In a combat unit, the role of the battle staff is to direct, guide, and control operations. This role is performed through execution of, or supervision of, all organizational functions (processes), as appropriate for each position in the staff and for the operational situation. Although, at certain times, each member may have to perform all of the processes comprising Organizational Competence, different personnel will more often perform different functions, depending upon their designated roles and locations in the organization. Accordingly, it is essential for unit effectiveness that each battle staff member be cognizant of all required processes and be proficient in performance of them.

The problem for commanders and other leaders is to make battle staff personnel strongly aware of the importance of organizational functions, highly sensitive to the necessity for effective performance of the processes, and proficient in their execution. In short, *the performance of required organizational functions should be as much a part of a battle staff member's repertoire as any other aspect of his technical performance.*

2. Developing Organizational Competence

Although it is not proposed as a panacea, Organizational Competence plays a major role in the performance of organizations and, accordingly, warrants major attention in efforts to improve effectiveness. Although Competence is a determining factor in the performance of all organizations, it is especially critical for military tactical units.

Such units are examples *par excellence* of organizations that must adapt readily to fast-changing environmental conditions. This requirement places a premium upon quick, effective reaction in situations of uncertainty, thus making it essential for the command and control system--the battle staff--to function flexibly, efficiently, and effectively. Competence is the quality of performance of the battle staff.

The development of Competence within a battle staff can be expected to result in (a) a more smoothly functioning command and control system, (b) adjustment of the unit to changes in the tactical environment with a minimum of wasted effort, lost motion, or reduced effectiveness, and (c) maintenance of higher levels of effectiveness under the pressures of combat.

In many military units, Competence is less than adequate because little systematic attention is given to organizational functioning. Attempts to improve effectiveness more

often take the form of increased emphasis upon regulated and formal responses (standard operating procedures) to control human variability and, thus, insure reliability in performance. There is a preference in many units for the certainty of standardized procedures with their clearly demarcated and logically related stages, over improved organizational functions which are less tangible and more ambiguous but which also can be more lasting and unquestionably exert more impact upon performance.

There can be no doubt that formal procedures are imperative for the effective functioning of any organization, and nowhere in this book is there argument for neglecting them. However, it can be stated without doubt that over-reliance upon standardized responses leads to organizational rigidity. Effectiveness within the fast-changing contexts of today's battlefields requires high levels of organizational flexibility, a quality that is essential in uncertainty situations and that has its source in what is called here Organizational Competence.

The conceptual framework related to Organizational Competence and operational definitions of the several processes offer bases for enhancing unit effectiveness through several ways of improving Competence. They are organizational analysis, organizational design, and training and development.

a. Organizational Analysis

The concepts subsumed under Organizational Competence offer potential for the diagnosis of organizational functioning and for the correction of dysfunctional aspects. For example, it is possible to specify which individuals, positions, or organizational units should perform each process. Such specification would enable the development of operating techniques and training uniquely designed to enhance the process performance of each individual or unit.

It is also possible to evaluate positions, individuals, and units in terms of how well the processes are performed, thus permitting identification of points within the organization that are functional or dysfunctional according to the quality of their process performance. Identification of dysfunctional points could lead to corrective action, retraining, or modification of the duties or role of a position.

Finally, the concepts provide a workable framework for periodic self-evaluation by a unit. Training exercises followed by process-centered after-action reviews, critique, and self assessment by a battle staff will greatly enhance Organizational Competence of the unit.

b. Organizational Design

The way in which an organization is designed can have far-reaching implications for process performance. This is especially true for combined arms task forces, and other task forces that may be uniquely designed for special missions or purposes. Organizational structure--lines of authority, responsibility, and communication--can either enhance or impede process performance. For example, every link in the chain of command contains potential for both delay and distortion of communication. Therefore, a structure that consists of numerous hierarchical levels possesses a built-in mechanism for degrading the quality of Communicating Information or Communicating Implementation--unless specific techniques or roles for facilitating or confirming communication are designed into the organization.

In a similar vein, a task organization that has been designed for a specific mission, or one that makes sense according to the "logics of organization," may never function effectively because special process requirements of the particular mission were not taken into account. Structures that are most conducive to process performance will vary according to the missions, objectives, and anticipated activities of the units. Ideally, process requirements will be determined prior to design of the organization and process considerations will be taken into account with the more usual functional (tactical or operational) aspects. In reality, process considerations usually are taken into account, if at all, after task forces and other organizations have been designed on the bases of operational requirements alone.

Considerations of process requirements in the design of organizations may lead to the establishment of special units or sections that are specifically charged with responsibility for performance of certain processes. One example of such special units is reconnaissance platoons or scout units that are specifically designed and assigned to perform what are, in effect, special sensing activities.

c. Training and Development

Although problems and objectives differ according to types, purposes, and missions of units, the processes that comprise Competence are universal. Accordingly, the question is not whether the processes occur; they must be performed to some degree in any organization that is at all functional. Rather, the question involves how well the processes are executed and how they are coordinated to produce total integrated battle staff and organizational performance.

Since organizational processes are more or less inevitable, an equally important issue is whether the processes of a unit will be allowed to operate unmonitored and uncontrolled, or whether battle staff personnel will be specifically trained, both individually and collectively, to perform and control them properly.

Improvement in Competence can best be achieved through programs that are specifically oriented toward *process training and process development*. That is, the development of Competence requires training programs with the specific objectives of developing individual and collective skills in process performance and with content and methods designed to accomplish these objectives. Competence skill training cannot be accomplished well if it is a subsidiary activity in training programs or blocks of instruction devoted principally to tactical or operational subjects. *The internal functioning of an organization in combat operations is as important as the tactics used and, certainly, good tactics will not be executed well by a unit unless its organizational processes are effective.*

For the above reasons, the only time that process improvement should "piggy-back" on operations training is during field exercises when major portions of after-action reviews can be devoted to assessment and critique of process performance. There, major attention should be focused on unit process development.

Training. Organizational processes are dynamic because their specific nature and performance requirements are constantly changing. Accordingly, the development of effective skills in performing such processes requires that individuals and teams, during training, "see" and "feel" the effects of their actions in realistic situations and have the opportunity to obtain valid feedback concerning results of their actions, so that further modification and skill enhancements may be accomplished.

The development of Competence skills should begin with conceptual analyses of Competence and its components, accompanied by cognitive skill training in controlled classroom settings. Following cognitive skill training, experiential training is the technique of choice. Here, methods such as role playing and simulation, administered in realistic and interactive organizational settings, can provide opportunities for personnel to vividly experience the results of their actions upon other battle staff members as well as upon the outcomes of exercises. Knowledge of the requirements for effective process performance, when coupled with controlled experiences in execution, can be expected to result in definite improvements in performance of a battle staff.

Organizational Development. Despite the obvious value to be derived from the controlled training discussed above, the greatest benefit for an organization is to be obtained from efforts to develop all of its elements in concert. Competence represents capability of the organization and is different from the sum of individual capabilities. Process performance involves organizational responses and the quality of any single response event is determined by the entire network of antecedent relationships and responses. This indicates that Organizational Competence can ultimately be improved most by efforts that focus upon developing the battle staff to function as a system.

Development of Organizational Competence can be accomplished best through training and development efforts that include (1) individual cognitive skill training, (2) experiential team training conducted under simulated field conditions, and (3) internal development efforts based upon analyses of the process performance of the battle staff, continuing assessment of Competence performance, and periodic Competence training conducted in tandem with other operational training programs.

3. Maintaining Competence

Since Organizational Competence is a team attribute, it is subject to decay like all attributes that are dependent upon human skill and motivation. Accordingly, there should be continuing effort within a battle staff to prevent decay and to maintain required levels of both process skills and motivation.

Maintenance of Competence can be accomplished through the following:

- (1) Continuing command emphasis upon process awareness, process proficiency, and teamwork.
- (2) Maintaining process and role skill levels through intermittent training, practice, and after-action reviews.
- (3) Maintaining integration through attention to the organizational and developmental conditions set forth earlier as requirements for integration.

B. IMPLEMENTING BATTLE STAFF INTEGRATION

Battle staff integration plays a critical role in the development and maintenance of Organizational Competence. When a battle staff is recognized to be a unified, open system, it becomes apparent that integration of the several parts and of the various functions is imperative.

The principal purpose served by integration is to enhance teamwork within battle staffs. Teamwork is essential to insure that all organizational processes are performed equally well and in the coordinated fashion required to produce unified action.

As stated in the preceding chapter, the integration of a battle staff should occur (1) when organizational conditions are conducive to cohesion and teamwork, and (2) if developmental activities in the unit are designed and executed to propagate high skill levels, stable team norms, and strong values for teamwork. More specifically, the essential elements for effective battle staff performance are:

- (1) Proficiency in role and team skills, including process performance, by all members, both individually and collectively.
- (2) A continuing team situation that
 - (a) Is attractive to members (motivation),
 - (b) Generates pride and solidarity (cohesion), and
 - (c) Produces strong group norms that value high team performance (norms and values).

Importance of the above elements is covered in the Integration Model set forth in Chapter VI. Here, suffice to say that careful scrutiny of the above conditions will reveal that they encompass a wide range of elements--leadership, training, communication, role definitions, and rewards, among others. To develop an integrated battle staff, these highly varied elements must be brought together in such a manner that the product is a genuine whole--greater than the sum of its parts, with its total performance more than and different from the sum of its individual members' efforts.

VIII. REQUIREMENTS FOR LEADERS

Many authorities who are concerned with the study of performance--individual, group, or organization--consider effectiveness to be control over environment. Thus, an effective organization is a unified system equipped with the knowledge, skills, and resources to control its environments, while an ineffective organization, for the lack of such capabilities, remains subject to forces over which it can exert little control. In military units, the key element for mobilizing the required capabilities is the battle staff.

As stated in various ways throughout this report, for a unit to overcome its operational environments, it requires:

- (1) *The capacity to evaluate reality*--the ability to search out, accurately perceive, and correctly interpret the attributes of the operational situation, including conditions both internal and external to the unit.
- (2) *Adaptability*--the capacity to solve problems and to react flexibly to changing demands of the operational situation.
- (3) *Operational Proficiency*--the technical competence to successfully execute the tasks arising from the demands of the operational situation.

A. REQUIRED ORGANIZATIONAL ATTRIBUTES

To meet the above requirements, a unit must develop a number of identifiable characteristics (Olmstead, 1968, pp. 63-65). The characteristics are:

Organizational Characteristics

- (1) Capacity to learn.
- (2) Open and efficient communication.
- (3) An organizational climate of confidence, trust, etc.
- (4) Internal flexibility and innovative ability.
- (5) A state of functional integration among subordinate units.
- (6) Operational proficiency.

Leader Resources

- (1) Leaders who are able to arrive at valid decisions speedily and efficiently.
- (2) Leaders skilled in identifying and using the potential present among unit personnel.
- (3) Leaders skilled in mobilizing and guiding the efforts of unit personnel.

Personnel Resources

- (1) Personnel who possess the proficiency necessary for mission accomplishment.
- (2) Commitment of personnel to organizational objectives.
- (3) A sense of unit identity among personnel.

In a demonstrably effective unit, characteristics such as those listed above can be frequently observed. For the most part, they either are associated with or derive from activities that are responsibilities of a battle staff. In turn, the effectiveness of a battle staff results from its leadership.

Whether a battle staff will develop into an integrated team with the competence needed to make it effective depends largely upon the nature of the leadership available to it. If a commander adopts a style of leadership which encourages competition and the advancement of individual subordinate unit interests, he is not likely to develop a very high order of teamwork among his battle staff. On the other hand, an outstanding team can result if he adopts practices which generate both coordination and a working system capable of coping with the stringent demands of the battlefield.

This type of leader behavior helps develop a battle staff capable of dealing effectively with day-to-day operational problems, and, in addition, encourages the growth of a team that can integrate diverse elements into a unified system. A leader who thinks and works in this manner develops within the battle staff members a growing capacity for judgments and decisions oriented toward the broad viewpoint of the total command rather than the narrow perspectives of individual and subordinate unit interests.

This raises an important question. With specific reference to battle staffs, what kind of leadership will be most effective? Research on the leadership of battle staffs specifically is almost nonexistent; however, general studies of the bases of leader effectiveness reveal one theme recurring again and again. *The leader who shows the most effectiveness is the one who recognizes the essential purpose of leading and who keeps this purpose clearly in mind in all of his relationships with the people he is trying to influence.*

For the leader of a battle staff, the purpose of his relationship with his subordinates is to promote effective performance among the members of the battle staff so that missions can be successfully executed. Therefore, a major function of a leader is to orchestrate the application of the skills and energies of his battle staff to solution or disposal of problems larger than any of the individual members could handle separately. "Orchestrate" suggests many critical activities; however, above all others, the term implies the necessity for creating within the battle staff conditions that are conducive to effective performance.

B. ESSENTIAL CONDITIONS

Following are some principal conditions that are essential for effective battle staff performance:

- (1) Factors which enhance proficiency
 - a. Effective organizational structure and role definitions.
 - b. Efficient procedures and practices.
 - c. Excellent role, process, and technical training for both leaders and members of the battle staff.
- (2) Factors which promote a common desire to belong to the battle staff and identify with it, i.e., factors which embrace cohesion
 - a. Good leadership and administrative practices.
 - b. Opportunity for each member to perform as a conscious member of a larger team.
 - c. Provision of occasional, explicit acknowledgment of team progress and of recognition of the shared responsibility for such progress.
 - d. Opportunities for battle staff members to contribute to decisions about how their team roles should be performed.
- (3) Factors which enhance motivation
 - a. A system within the unit which makes careful provision for incentives, reward, and approval of teamwork.
 - b. Procedures that make information about individual and battle staff performance available to battle staff personnel.
 - c. Opportunities for individuals and the battle staff as a whole to experience success in the performance of team tasks.
 - d. Opportunities for challenge and growth for each member of the battle staff.
 - e. Opportunities for optimum latitude in performance of the various roles in the battle staff.

A battle staff can become genuinely effective only insofar as the commander acquires confidence in the staff's capacity to meet his needs (Olmstead, 1968, p. 208). This capacity cannot be ordered into being; it must be created through skillful leadership. The commander can make his battle staff effective to the extent that he uses it properly and works at developing constructive relationships between staff personnel, between staff and line officers, and between the commander, the Executive Officer, and members of both staff and line.

One of the most common barriers to effective teamwork is overcontrol. Individuals and units are frequently so bound by the limits placed upon them that true collaborative teamwork is beyond their capabilities. Therefore, a principal function of the officer responsible for integration is to remove obstacles from people who are trying to work together and to create conditions within the unit that permit and encourage the development of integration and, therefore, teamwork.

In developing a battle staff, the commander's goals should be the transmission of knowledge, the inculcation of skills, and the cultivation of teamwork. This involves training battle staff members in their respective role requirements, while, at the same time, teaching them to concentrate upon solving mutual problems rather than protecting private jurisdictions. The commander wants his personnel to dispense with personal viewpoints and learn to see problems in terms of the command as a whole.

The manner in which the commander controls the activities of his battle staff sets the patterns of work and attitude that govern its effectiveness. Moreover, the evolution of an effective staff is itself part of that process of organizational development for which skillful leadership is the essential ingredient.

C. LEADING THE BATTLE STAFF¹

The most important single factor affecting battle staff functioning is the character and competence of that officer who serves in an actual daily direct supervisory capacity to the battle staff. In many instances this may be the battalion or task force commander; in others, it may be the executive officer (see below). In certain units, these officers may share the role. Regardless of who serves this function, it is clear that the leader, by his

¹The discussion in this section follows and is adapted in part from Department of the Army Pamphlet 10-15, October 1968, pp. 201-202.

actions and through explicit policy, either promotes or limits performance of his battle staff personnel and, thus, he exercises considerable influence upon its effectiveness.

The leader of a battle staff must be able to hear the music as well as the words in group behavior. In addition to the technical and procedural aspects of battle staff functioning, the effective leader must be aware of the less tangible, but equally important, social and interpersonal factors that affect performance. Furthermore, he should be adept at manipulating these factors for greater battle staff effectiveness.

Several aspects of battle staff leadership are especially relevant. First, *the work of a battle staff involves the continual identification and reformulation of problems.* In military operations, although activities may be planned to the smallest detail, this cannot be accomplished with absolute certainty because no one can ever be sure of all the factors that may become involved as an operation proceeds. Therefore, activities often have to be planned on the basis of less than complete information or in anticipation of many possible eventualities, some or all of which may never occur. Even to select the particular facts that are relevant from all the data that may be available is no easy matter. Therefore, much battle staff activity involves being alert to and exploring a wide range of data and ongoing events to find possible alternatives that will yield desirable consequences. *One important function of leadership is to guide this exploring process. By providing structure in the form of command guidance and problem definition, the leader keeps ambiguity to a minimum.*

A second leadership function involves the provision of appropriate methodological assistance as needed by the battle staff. The leader must suggest relevant concepts and techniques which will aid in handling operational problems. In addition, he must guide the battle staff along lines that will provide a happy compromise between the procedural rigidity and flexibility that has been touched upon several times in this report. Failure to provide this methodological help may be a serious source of unsuccessful battle staff functioning.

A third function of battle staff leadership involves the identification and coordination of member resources. Attention must be paid to creating conditions that will enable a person with the ability to fill an identified need to make a contribution. This function requires awareness of the different capabilities that people and units can bring to bear on tasks. It also requires defining members' assignments in each operation in such a way that the most suitable people and units can contribute the most. In this connection, a

leader may encounter difficulty if he does not make himself continually aware of the motivations and norms (behavioral standards) of his battle staff.

1. Developing Organizational Conditions for Teamwork²

A general principle that can be applied is that team integration will be increased by anything which heightens the awareness of an individual that he is a functioning member of one specific group and that he can obtain significant satisfactions from his membership in it. Everyone identifies himself with some group or organization. However, these so-called "reference groups" are not always those of which we are at the moment members. Therefore, the problem of developing group integration (cohesion) is basically that of changing an individual's identification from other groups to the one of which he is currently a member.

There are many specific things a leader can do to develop effective teamwork. Some are simple, routine functions of administration. Others require rather complex leadership skills. In either case, most of the ways will involve attending to matters which are related to the necessary organizational conditions listed earlier and discussed in Chapter VI.

(1) *Roles of each battle staff member should be clear to both role incumbents and all other members.* This refers not just to written job descriptions, but, rather, to all expectations, both formal and informal, held by the commander and all other members of the battle staff. Roles consist of all formal duties and responsibilities, and informal expectations and norms that evolve through interaction between personnel. Especially with regard to teamwork, congruity of role perceptions between commander and incumbents, and among all battle staff members, is vitally important. When people do not have common understandings about how the various roles should be performed, coordinative behavior is extremely difficult, if not impossible.

Role clarity is best achieved when (1) the commander makes explicit to the battle staff precisely what his expectations are--with respect to each position and the team as a whole, and (2) when the battle staff as a group has frequent opportunities to jointly examine team performance and to clarify role expectations among the members.

² The discussion in this section follows and is adapted from Department of the Army Pamphlet 600-15, October 1968, pp. 176-178.

(2) *Battle staff members should be kept aware of command objectives.* Through both formal meetings and informal daily activities, the team-minded leader will strive to keep both the objectives of the command and the objectives for subordinate units constantly before the members of the battle staff. The problem for the commander and his subordinates is to establish and work toward the accomplishment of concrete objectives whose achievement will result in execution of the basic mission. Objectives are the stepping-stones to mission accomplishment. Effectiveness requires that battle staff members keep these objectives constantly at the forefront of awareness. Accordingly, as he works with subordinates, the team-minded leader must use every opportunity to stress the current objectives and the means for their achievement. Through constant emphasis, the leader will strive to generate individual involvement with the common objectives of the unit.

(3) *A cooperative atmosphere must be developed within the battle staff.* It is extremely important to develop genuinely cooperative relationships between the commander and the members of his battle staff and among all members. It is impossible to impose true cooperation upon people. Therefore, the development of cooperation among battle staff members must be truly a matter of leadership by example. The commander must work at and rely upon his own team attitudes to filter gradually through the staff until, in time, individual members begin functioning more cooperatively, begin to communicate more among themselves, and gradually exchange dependence upon the commander for interdependence among all members, the commander included.

(4) *Adequate communication must be established.* The problem of who should communicate what, to whom, when, and by what means is one of the most important problems in team relationships. It will be recalled that Communicating Information and Communicating Implementation are among the most critical processes of Organizational Competence. Accordingly, team-work will be maximized only when there can be established common terminology; common definitions of objectives, problems, situations and tasks; and common agreements (either explicit or implicit) concerning modes and channels of communication. Most such understandings develop in the course of frequent and free association between battle staff members. An important task of the leader is to encourage such contacts and to insure that overcontrol does not create barriers to communication.

(5) *Common understandings must be developed concerning standards of performance.* Agreement on appropriate standards of performance and behavior is

intimately related to development of teamwork because the system of standards in a group serves as a means of quality control. When an individual accepts the norms (standards) of a group, he "belongs." When he belongs, he coordinates his actions in accordance with the common needs. A commander can influence the development of common understandings by publicly and officially expressing the standards he deems desirable and, even more important, by subjecting both his own performance and behavior and that of his subordinates to evaluation against these standards.

(6) *Control must be exercised on cooperative efforts within the battle staff.* Organized groups with strong cohesion have been found to exhibit better teamwork and to disintegrate less rapidly under stress than do unorganized groups. A part of group organization is agreement (implicit or explicit) concerning the amount of control to be exercised by the various levels of command, the degree of authority to be delegated, areas of assigned responsibility, and the limitations to be placed upon individual freedom to act.

The control exercised on cooperative effort is one of the functions more commonly associated with "leadership." Whenever a commander undertakes to define, interpret, or clarify the freedoms extended to individual subordinates or the limitations imposed upon them, he is influencing the performance of the battle staff and is, at that time, giving leadership to its members.

Probably the most significant aspect of this leadership by control is the degree of discretion to be granted to subordinates, that is, the control of "freedom of action" or, more simply, the control of alternatives open to subordinates for making decisions. This particular point has long been a bone of contention in analyses of leadership. The positions have ranged from retention of complete and total control of all actions and decisions by a single leader to the other extreme of wide diffusion of responsibility throughout a group of subordinates. However, neither of these extreme approaches has been found to be at all productive. Effective team performance results when subordinates are provided sufficient latitude to exercise responsibility at their own levels, while leaders simultaneously exercise the guidance and control necessary to coordinate those activities that contribute to the mission of the larger unit. This can be achieved through common understandings concerning areas of authority, responsibility, freedom to act, etc., and through explicit command policies which establish clearcut criteria as to which decisions should be made at subordinate levels and which should be referred to the commander.

(7) *Rewards must be distributed fairly and equitably within the battle staff.* The distribution of rewards and other satisfactions can encourage teamwork or it can splinter a team. Subordinates' perceptions of who gets the credit or their suspicion of exploitation--regardless of whether it actually exists--can be a serious problem in a battle staff. Because of the way function and responsibility are distributed in military organizations, it is almost inevitable that some assignments will seem to have more status than others, that some personnel will have jobs more satisfying to them, that the contributions of all personnel will not seem equally valuable and will not be equally rewarded. Such reactions are especially subjective when the issue seems to be reward expressed in status, favor with the commander, etc. Disgruntlement and competition arising from such perceptions can be especially destructive for teamwork. A commander must be constantly alert for such problems and must exercise extreme care that misperceptions in this area do not develop in his unit.

(8) *Stability is necessary to achieve integration in a battle staff.* Stability in the relationships among members is essential for effective teamwork. Each member must be able to predict with assurance the behavior and actions of all other members. This required assurance results from familiarity and experience among all battle staff personnel. When relationships are stable, each member comes to know what is expected of him by others. Furthermore, he learns the roles of other team members as well as their characteristic ways of acting. Accordingly, he knows what to expect from others, where other members are weak, where they are strong, etc. He also learns to depend upon other members, to work with them, and to support their efforts. This stability of roles and of performance expectations develops through frequent contacts among the members of a team and from experiences of success in working together. This stability cannot develop if there is constant turnover or other turbulence within the battle staff. It is one function of leadership to ensure that conditions exist within the unit sufficient for such stability to develop.

(9) *Teamwork requires an efficient organizational system that will provide the means through which activities of team members can be integrated.* No matter how high the motivation to cooperate, teamwork will not result unless members' efforts can be effectively channeled. The term "organizational system" refers to those procedures and practices used to channel the efforts of personnel through such functions as exercising direction, assigning responsibilities, exchanging information, making decisions, organizing, coordinating, etc., within a battle staff. The system includes the formal organization and procedures but goes beyond them to also include the various informal

means by which the activities of personnel are integrated and coordinated. These interdependent processes constitute an overall system which channels and guides the activities of the battle staff. For this reason, it is more appropriate to refer to "the organizational system" rather than merely to "organization" as a critical element in battle staff integration.

Effective teamwork within a complex organizational context requires a system which will ensure that, consistent with their objectives, missions, and responsibilities, members are provided with all the information, decisions, guidance, and assistance necessary to perform effectively and to contribute appropriately to overall unit effort. More specifically, the system must function in such a manner that:

- (1) Each member of the command is provided missions and objectives which he will be motivated to achieve and which, when accomplished, will contribute to the superordinate objectives of the command.
- (2) The techniques, procedures, and plans developed by the battle staff are such that all members will be motivated to use them to their maximum potentiality.
- (3) The activities of battle staff members fit together and are mutually supporting.
- (4) Opportunity is provided for contacts between members sufficient for mutual trust and confidence to develop.

D. A ROLE FOR THE EXECUTIVE OFFICER

The importance of Organizational Competence to combat effectiveness makes it essential that the maintenance of competence be a formal responsibility at high levels within a unit. This is the only way that Competence can be given continual, day-by-day attention.

Although the way a unit functions must be a commander's ultimate responsibility and should receive command emphasis, it is likely that, during combat operations training, a commander's attention will be devoted to other matters. Usually, the attentions of the Commander and the Operations and Training Officer (S-3) are consumed by planning and supervision of ongoing activities. Therefore, it is not realistic to expect these individuals to give Competence the attention that is required.

Battalion Executive Officer is a position that is highly suitable for inclusion of the role of Organizational Competence Officer. Especially during combat operations, the Executive Officer has sufficient flexibility to observe organizational functioning while overseeing other activities for which he is traditionally responsible. Accordingly, it is

strongly recommended here that "Organizational Competence Officer" be made a part of the role of Battalion Executive Officer.

The role of Organizational Competence Officer should include the following activities:

- (1) Becoming expertly knowledgeable about Battle Staff Competence and Integration.
- (2) Conducting or supervising Individual Role Training and Individual Experiential Training for battle staff members.
- (3) Assessing battle staff Organizational Competence during training exercises.
- (4) Assessing battle staff Integration during training exercises.
- (5) Conducting after-action reviews concerned with Organizational Competence and Teamwork.
- (6) Planning and conducting remedial efforts within the battle staff in connection with Organizational Competence and Integration.

Making the executive officer the principal responsible person for Organizational Competence and Integration will insure that these elements receive the attention warranted by them. In this way, the functioning of a unit will attain equal importance with other technical aspects of military endeavor.

In this proposed role, the executive officer should be concerned especially with the activities described in the next chapter.

IX. DEVELOPING AN EFFECTIVE BATTLE STAFF

This chapter will be concerned with developing or improving battle staff effectiveness. From earlier chapters, it will be recalled that effectiveness depends upon the following elements:

- (1) Individual Role Skills--The skills (both technical and process) of individual members, including the commander, in performing their respective battle staff roles.
- (2) Individual Team Performance Skills--The skills of individual battle staff members in coordinating their activities with those of other members, and in contributing to the collective execution of team functions or team-related processes.
- (3) Integration--The force that melds the roles, attitudes, and activities of battle staff members and strongly contributes to the maintenance of structure and function within the battle staff.

Of course, the elements are related. Each depends upon and also contributes to the other elements. These reciprocal relationships and activities that contribute to effectiveness are illustrated in Figure IX-1 in a later section of this chapter.

Competence should not be made ancillary to other performance elements during training. Rather, it should be one direct focus of training and should be a continuing concern during all day-to-day activities of the battle staff.

A. IMPLEMENTING ORGANIZATIONAL COMPETENCE

Organizational Competence is a concept. It is a way of classifying and systematizing organizational functions that must be performed, and of making them more meaningful for everyday application. In reality, the processes that are the focus in Competence are not new. They have always been a part of organizational activities and have always been performed, to one degree or another, wherever organizations have existed. The problem has been that, all too often, the processes have been so commonplace that their importance has been ignored in favor of more goal-directed matters. As just one example, the quality of tactics frequently is emphasized in training; however, the techniques

(quality of processes) used to obtain implementation of the tactics within a unit are often given short shrift.

The fundamental premise of the concept is that an organization is a problem-solving, action-taking system which functions within environments that change constantly. For the organization to actively master its environments, or to cope with events within them, adaptability is essential. Here, "adaptability" coincides with problem-solving ability, which, in turn, depends upon the organization's flexibility (Bennis, 1966, p. 52). According to Bennis, flexibility is the ability "to learn through experience, to change with changing internal and external circumstances" (1966, p. 52).

Thus, in order for a unit to cope with its environments, it must be sufficiently flexible in its internal processes to enable it to modify operations so as to meet the demands of new problems arising in its environments, both internal and external. This is especially true for units engaged in combat, where organizational rigidity can be fatal.

In turn, adaptability relies upon the unit's capability for reality-testing. According to Bennis (1966, p. 54), "if the conditions requisite for an organization are to be met, the organization must develop adequate techniques for determining the real properties of the field in which it exists." The effective organization requires adequate reality-testing techniques if it is to cope with events in its critical environments. "Adequate reality-testing" refers to search and sensing processes sufficiently effective to provide the battle staff with information that will permit it to develop accurate perceptions of the environments within which the unit must function. In short, *a correct understanding of the problem is necessary before it can be solved and overcome. The search, sensing, and communication processes involved in Reality Testing help to provide that understanding.*

1. The Adaptive Coping Cycle

It is important to note that, for any particular problem, event, or situation, the seven processes that comprise Organizational Competence are conceived to occur in the sequence described in earlier chapters as "the Adaptive-Coping Cycle." Thus, when a problem arises or a change occurs in an environment, the organization must first sense the problem or change, communicate the sensed information, make decisions concerning how to cope with the problem or change, and so on through the cycle.

Of course, in actual practice, the cycle is not always so clearcut or straightforward. It tends to operate erratically, with redundancy and backtracking at many points.

Nevertheless, there is considerable evidence that processes which occur later in the cycle are dependent upon the quality of those that occur earlier. For example, the quality of decisions depends, in part, upon the quality of the information that has been sensed and communicated. Similarly, the quality of actions taken depends upon the character of earlier decisions and the communication used to obtain implementation. This leads to the obvious conclusion that *maximum effectiveness requires that all processes be performed equally well. It also means that the correction of dysfunctional processes will result in improvement in overall process performance.*

2. Identifying Critical Environments

Throughout this discussion, it has been stressed that military organizations "function within constantly changing environments." Because of these constant changes, all organizational functions (processes) must be executed *in relation to* current conditions in the unit's critical environments. The "critical environments" of a unit are all environments that can have an impact upon the unit and its operations.

It is useful to speak of multiple "environments," rather than one amorphous large "environment," because consideration of each separate impacting element as an "environment" makes it possible to better isolate each separate source of impact and to assess its potential impact upon the unit. Such "environments" may be opposing forces, terrain, climatic conditions, adjacent units, higher friendly organizational levels, or support organizations. Any element outside of the organizational boundaries of the unit that may be relevant should be considered an "environment" and, accordingly, should be monitored for its potential impact upon the unit.

"Critical environments" are those environments that can have an important impact upon the unit and its operations, i.e., all those environments to which the battle staff should be sensitive and about which all relevant information and intelligence should be obtained on a continual basis. At any given time, one or all of a unit's environments may be critical, and the relative criticality of relevant environments can change during the course of an operation. Accordingly, *constant monitoring and assessment of relevant environments is an essential requirement.*

At the beginning of an operation or training exercise, and at periodic staff meetings, the commander or another responsible officer, should review with the battle staff the environments that may be "critical," their main characteristics, and the types of impacts that each may exert upon the unit. In planning an operation, study of potential environments

and their possible impacts may be necessary before final identification of critical ones can be accomplished. The purpose of all this is to insure that battle staff members become alert to all elements that may possibly impact upon operations, so that an event occurring within an environment can be sensed at the earliest possible time and the commander can receive the most comprehensive analyses of the situations the unit may encounter.

Early identification of critical environments makes it possible to plan ways to conduct unit sensing activities, e.g., use of reconnaissance patrols or assigning a liaison officer to Brigade or Division headquarters to obtain early information about changes in plans or operations. Similarly, early identification of critical environments makes it possible to provide meaningful briefings to members of the battle staff, as well as all unit personnel, with regard to the kinds of events and information to which they should be alert and which should be reported to task force headquarters.

3. Sensing

The execution of organizational processes must be *in relation to* the requirements of the operational situation. Accordingly, a process that is relevant and appropriate under one set of conditions may require modification, or even elimination, as conditions change. The problem for battle staff members is to identify changes in battlefield conditions and adapt their activities to the changes.

Sensing is the initial process in the Adaptive-Coping Cycle. It is the process by which the unit acquires and interprets information about the external and internal environments. The specific character of required sensing activities may differ according to the mission of the unit and the particular environments that are critical for it. However, whatever their specific nature, organizational sensing activities include the following:

- (1) *Search*--Actively seeking information about critical environments.
- (2) *Acquisition of Information*--Acquisition through either active seeking or passive receipt of information.
- (3) *Processing*--Collating, transforming, or otherwise organizing information for use by the battle staff.
- (4) *Storing*--Keeping information in maps, situation boards, files, and unit memory, in a form such that it can be retrieved and used.
- (5) *Interpreting*--Attaching meaning, either speculative or confirmed, to information that has been acquired.

Sensing activities are those through which a unit obtains as accurate an understanding as possible about the environments that affect it and the events that occur within those environments.

Sensing is a responsibility of every member of a battle staff. However, the very shape of a military organization--a pyramid--and the separation of roles in a battle staff means that sensing responsibilities are greater for some individuals than others.

a. Search and Acquisition

Most initial sensing responsibilities fall upon individuals who are in contact with environments that are critical. Thus, considerable sensing responsibility on the battlefield rests with those personnel who are at points of contact with opposing forces, have opportunities to observe, or have designated responsibilities for acquiring intelligence (e.g., reconnaissance units). In this instance, the responsibility for sensing may fall upon fairly low-level personnel in the unit, e.g., company commander, platoon leader, tank commander, squad leader, scouts. On the other hand, sensing of higher levels may have to be accomplished by the Task Force Commander, who is at the point of contact with higher levels.

In summary, responsibility for the acquisition of information may fall upon any member of the unit, depending upon his circumstances and access to the information. However, certain positions in the battle staff will have more opportunities to conduct sensing activities. In fact, sensing may be a stipulated part of their job description. Within battle staffs, company commanders, S-2's, and battalion commanders and executive officers (where assigned) will perform the greater portion of "acquisition" in the unit's sensing activities because of their particular roles and locations at the boundaries of the organization.

It is important to note that, in sensing, the acquisition of information by a unit may be either passive or active, or both. "Passive" sensing is merely the receipt of information without actively seeking it. This might include much of the materials contained in Warning Orders or Operations Orders, which are provided to the unit without solicitation or actively seeking them, as well as all other information that is not actively sought but is received.

On the other hand, "active" sensing occurs when the unit or its individual members actively seek information about anything that may affect the unit. These search activities are initiated within the unit, may be formal or informal, and involve active efforts to obtain needed information.

It should go without saying that combat-effective units engage in many more active sensing activities than do those that are less combat effective. It has become clear that, in

battlefields of the present and future, units of any size cannot rely for all critically needed information upon sources outside their own boundaries. This applies especially to battalions and combined-arms task forces below division level. To be effective, such units must be fully aware of both current and contingent events in their sectors. This awareness can only be achieved through continual, active searches for information and intelligence.

The acquisition (seeking and obtaining) of information is probably the most important aspect of sensing. However, other types of activities are also involved in sensing as a unit responsibility. These are processing, storing, and interpreting information that has been acquired.¹

b. Processing

In a modern task force, information is derived from many sources and in numerous forms. Furthermore, information continues to be acquired throughout an operation. Accordingly, an important aspect of organizational sensing involves processing acquired information so that it will be available in a form that (1) is meaningful and useful to the battle staff, and (2) will permit storage in the unit memory so that it can be easily retrieved for later use.

As a part of Sensing, the processing of information includes:

- (1) Collating related information that is acquired from various sources, so that it can be integrated into a meaningful whole.
- (2) Transforming acquired information into forms that will be most useful to the battle staff, e.g., posting information on situation maps in TOC.
- (3) Organizing sensed information so that it will be most meaningful and relevant for potential users.

c. Storing

In a modern task force, the availability of information is critical. Accordingly, storing of information so that it will be readily available for use is highly important.

A major problem noted in many observations of training exercises is that information which has been acquired is frequently not posted on situation maps or logged

¹ In the original conceptualization of Organizational Competence, "Sensing" was limited to seeking and receiving information. However, observations in Projects FORGE and Cardinal Point indicated that, in military units, sensing activities also include processing, storing, and attaching meaning to information as important aspects.

so that it is readily available. On the other hand, frequently, information that has been stored is not used by commanders and operations officers as they direct a battle.

d. Interpreting

Often, information may be acquired only to have the wrong interpretation placed upon it, thereby making the information useless or even erroneous. Interpretation is attaching meaning, relevance, or significance to information that has been acquired.

Next to acquisition, interpretation is probably the most important aspect of sensing. Information that is totally complete and fully valid is useless unless the correct meaning is attached to it at all levels.

The special danger is that, before the sensing process is fully complete, information that is acquired at the boundaries of a unit may be handled and processed at several levels, with opportunity for faulty interpretation and erroneous transmission at every level. *For this reason, training in interpreting information and intelligence should be provided to all levels in the unit.*

e. Quality Requirements

The essential requirement in Organizational Competence is quality--how well the processes are performed. The following are some general questions that should be addressed about a unit's Sensing:²

- (1) Was all information that could be available to the organization obtained by it?
- (2) Were attempts to obtain information both relevant and effective?
- (3) Was acquired information processed, integrated, recorded, and stored so as to have maximum utility?
- (4) Was correct interpretation placed upon information that was obtained?
- (5) In view of the information obtained, was a correct assessment made of it?
- (6) Was sensing performed effectively at all levels?

² The questions that are proposed as quality requirements are quite general and are posed here to suggest a general approach that should be taken in considering Organizational Competence. Specific criteria to be used in assessment are presented later in this chapter.

4. Communicating Information

This process is concerned with those activities whereby sensed information is transmitted to those who must make decisions about it or otherwise act upon it.

It is the function whereby acquired information is transmitted to points where it may be needed; but, it especially applies to the transmittal of information from points where it is sensed to those personnel who must make decisions about it. *This process does not include the transmittal of decisions, orders, instructions, or requirements for implementing them.*

Communicating Information includes the following:

- (1) The initial transmittal of information by those who have sensed it.
- (2) Relaying of information by intervening levels.
- (3) Dissemination of information or intelligence throughout the unit.
- (4) Discussion and Interpretation--those communicative acts through which members of the unit attempt to clarify information and its meaning or to discuss implications of the information.

Studies conducted in Projects FORGE and Cardinal Point have shown clearly that Communicating Information is one of the most important processes in the system. Effective performance in it is highly correlated with combat effectiveness and this process contributes one of the highest weights to Combat Effectiveness ratings.

When Communicating Information is recognized as a function of the entire organization, its importance is easy to understand. At every organizational level, decisions must be made as to what to communicate, what not to transmit, how much to communicate, when to do it, to whom it should be sent, and how to transmit it. These problems are difficult when communication is between two levels. In a multi-level organization, the potentials for error and distortion increase greatly.

There is a considerable paradox and conflict here between the need for complete information, the need for communications discipline and security in combat, and the need to avoid overload of communication nets. The optimum solution is difficult to discern, and the answer probably depends upon the situation of the moment. However, the position taken here is that "more is better," "too much information is better than not enough." Within the limits of combat security, everyone should be provided all information that will permit good and valid decisions and actions.

a. Quality Requirements

Some general questions about Communicating Information are:

- (1) Was information that had been sensed by the organization communicated to everyone who needed it when they needed it?
- (2) Was communication of information complete, accurate, and timely?
- (3) Was communication of information efficient?

5. Decision Making

This process is concerned with the quality of decisions made at all levels of the organization, but especially at all levels within the battle staff.

Decision Making is the deliberative acts of one or more persons which lead to a conclusion that some action should be taken, or should not be taken, by the organization. It is important to note that the decision-making process in military units is not limited to those tactical decisions made by a commander, but, rather, it includes all decisions, however large or small, made by any member of a battle staff. It is also important to note that decisions may be made that lead to Sensing Actions, Stabilizing Actions, Coping Actions, or Feedback Actions.

Except for execution (Coping Actions), Decision Making is the only process to which any attention is given in service-school training. The formal decision-making process is sometimes taught in connection with instruction in tactics; however, it appears that short shrift is usually given to post-exercise analyses of decisions following field exercises. Although decision-making is usually considered to be the most critical determinant of battlefield success, the training and exercise of battle staffs in decision-making, especially team decision-making, seems to be in short supply as well as very unsystematic.

Aside from decisions that are simply erroneous--wrong or mistaken--the greatest problems in military organizations arise from decisions that are made without coordination with other units, or in which the activities of other elements, or impacts of contemplated actions upon other elements, are not taken into account during the process of making decisions. The importance of coordination and of coordinative decision making can only be imbued through repeated command emphasis during training exercises.

a. Quality Requirements

Some *general* questions for Decision Making are:

- (1) Was all relevant available information used in decision making?
- (2) Were the decisions made at each level correct in view of information available to decision makers?

(3) Were decisions timely?

6. Stabilizing

Stabilizing is the process of adjusting internal operations or internal conditions, or of otherwise taking action to maintain stability and functional integration within a unit. The process involves actions taken to forestall potential disruption that might result either from events in the environment (e.g., OPFOR action) or from actions taken within the unit (e.g., a decision to realign the unit's defensive positions). Thus, Stabilizing decisions and actions are frequently made in concert with major operational decisions. A task force commander may make a major operational decision and, at the same time, decide to make adjustments within the unit to counter the turbulence that could be generated by the operational decision and the resulting actions. Keeping in mind that Battle Staff Integration involves teamwork, Stabilizing includes actions intended to maintain integration, and thus, coordination and teamwork. However, Stabilizing applies to the entire unit and not solely the battle staff.

Stabilizing is one of the more nebulous, yet one of the more important, processes in the Adaptive-Coping Cycle. It involves most of those activities which usually fall under the rubric of "leadership" in military terminology and instruction. Whereas the other Competence processes are devoted mainly to task or mission-related actions, Stabilizing is concerned with those maintenance activities needed to keep the unit strong, stable, and integrated, and, thus, capable of executing and sustaining required operations. Put in the terms of Benne and Sheats (1948), whereas most of the processes are concerned with *task functions*, Stabilizing is devoted to *maintenance functions* of the organization.

The premise behind the inclusion of Stabilizing as a fundamental organizational function is that, when a system faces and attempts to cope with disrupting events in its external environments, internal adjustments may be needed in order to maintain stability and integration within the system. Thus, when a combat unit acts to deal with occurrences on the battlefield, adjustments in internal functioning or internal conditions may also be necessary to preserve unit stability and integrity. Stabilizing is the process through which stability and integration are maintained by the battle staff.

Findings in Projects FORGE and Cardinal Point and observations in many field training exercises suggest that performance of the Stabilizing process may be a major determinant of combat effectiveness. As stated earlier, the activities involved in Stabilizing encompass most of combat leadership. However, it appears that, in the heat of a combat operation, commanders and command and control personnel often fail to provide the unit

maintenance functions that might be performed routinely under less stressful conditions. Yet, the maintenance of functional integration may be critical under battlefield conditions. The continuance of Stabilizing functions in combat may be the mark of more effective battle staffs.

Especially common failures in this area are:

(1) Failure to consider the impact of a change in one sub-system upon another subsystem--because the various parts of an organization tend to be linked, a proposed change in one part should be carefully assessed to ascertain its probable impact upon other parts.

(2) Failure to achieve stable change--where the effects of proposed task-related changes have been assessed, Stabilizing actions should be initiated simultaneously with the change in order to avoid negative impacts upon other subsystems and to restabilize relationships between subsystems.

a. Quality Requirements

Following are some general questions:

- (1) When decisions were made, were their potential effects upon the organization taken into account and were actions taken to counter any negative effects or to prevent excessive turbulence in the unit?
- (2) Were internal operations or organizational arrangements adjusted appropriately to accommodate new decisions, developments, and requirements?
- (3) Were unit procedures and practices sufficiently flexible to enable the unit to adjust its activities easily to changed conditions and situations?

7. Communicating Implementation

This process includes those activities through which decisions and the requirements resulting from decisions are communicated to those individuals or units who must implement the decisions. It is important to note that the process includes the full chain of communication from the original decision maker and planner to units or individuals who must carry out the action. An example of such a chain includes all of the links between a task force commander, who makes a tactical decision, and, within the battle staff, the company commander whose unit must execute the action. Such linkage might be as follows: TF Commander - S 3 - Company Commander. Within a full task force, such linkage might include: TF Commander - S 3 - Company Commander - Platoon Leader - Squad Leader.

It goes without saying that initiators of implementing communications should insure clarity and completeness in their directives, orders, and instructions. In addition, however,

the activities of "linking" individuals are of particular importance in the process. "Linking individuals" are those personnel at intervening levels who relay instructions between the original decision maker and the individuals who must ultimately implement the decision. It is incumbent upon these individuals to insure that the intent and sense of the original communication is maintained throughout passage along the entire chain of command. Suffice to say that *the communication links served by intervening organizational levels are dangerous in their potential for distortion and error; however, they are also necessary for the maintenance of coordination and the supervision of operations.*

In addition to the straightforward transmission of directives, orders, and instructions, Communicating Implementation also includes "discussion and interpretation"--those communicative acts through which clarification of requirements is achieved and implications for action are discussed. This includes both requests for clarification and responses to such requests, as well as inquiries and responses about implications and consequences of planned activities.

a. Aborted Decisions

There is considerable evidence that errors, distortions, selective omissions, and outright breakdowns in communications as messages pass down the chain of command are major causes of failures by units to implement command decisions. In Project FORGE, it was estimated that at least 50 percent of the "Aborted Decisions" found for Low Effectiveness groups were caused by errors, delays, or breakdowns in Communicating Implementation. ("Aborted Decisions" were those decisions made by battalion commanders or S-3's which were never implemented by subordinate units.)

Aborted decisions may occur for either of two reasons. The first arises when there is error, distortion, or breakdown in the communication chain, as discussed above. The second reason for an aborted decision is simple failure to carry out the action by individuals or units at the end of the chain. Such failures to execute may be justified or not; however, the fact remains that, in some units, many aborted decisions occur, and such failures to execute required operations contribute heavily to low combat effectiveness.

b. Quality Requirements

Some general questions concerning Communicating Implementation are:

- (1) After decisions, was communication about implementation requirements complete, accurate, and timely?

- (2) Did all communication links between decision makers and executing personnel function effectively and efficiently?
- (3) Was everyone informed who should have been informed about implementation decisions and requirements?

8. Coping Actions

This process is concerned with execution, and with how actions are carried out against target environments. The process is primarily concerned with the actual execution of actions at points of contact with the target environments. Although heavily oriented toward the battlefield, Coping Actions also include responses to higher level queries, requests, and requirements, as well as actions or recommendations addressed to higher levels when intended to cope with higher level requirements, or when attempting to obtain some change in a higher level environment.

Analyses and assessments of Organizational Competence are always approached from the standpoint of the organization being analyzed, i.e., from inside the unit under scrutiny. Accordingly, external Coping Actions will very often include actions taken in relation to the higher level environments of the unit, e.g., in the case of battalion-level task forces, action in response to some request, inquiry, directive, or other action by Brigade or Division personnel. On occasion, such Coping Actions may be as critical for success as those concerned with events on the battlefield. In all cases, the ability of a unit to cope with the requirements and actions of higher levels may be extremely important to its welfare and its future.

The main consideration in assessing Coping Actions is execution. How well was the action performed? Was it executed according to the original plan, or in accordance with approved modifications to the original directive? What were the effects of changed circumstances on the battlefield? Was the use of discretion permitted to leaders at the points of contact? Did leaders use discretion? Was the discretion appropriate to the circumstances of the moment? What were the effects of the executed Coping Action? Were results (including successes, failures, delays) communicated promptly to higher levels?

Questions such as those above get to the heart of some important considerations in the assessment of Coping Actions, as well as in after-action reviews of combat exercises. The problem is that there may be considerable deviation between the formulation of a plan and its execution, and, under some circumstances, deviation may be justified. Mission-type orders are designed to permit reasonable latitude to leaders at the point of action. But, how much latitude should be permitted, and what circumstances make deviation acceptable?

All of the above considerations are important aspects of Coping Actions and their evaluations.

a. Quality Requirements

Following are some general questions about Coping Actions:

- (1) Was execution of actions correct and effective?
- (2) Were the actions executed in accordance with the intent of the decisions and plans from which they derived?
- (3) Were all actions leading from decisions actually carried out, i.e., were there any aborted decisions?
- (4) What were the effects of distorted or aborted decisions and plans?

9. Feedback

According to Bennis (1966, p. 52), for an organization to actively master constantly changing environments, adaptability is an essential attribute. In turn, adaptability depends upon the organization's "flexibility," which is "the ability of the organization to learn through experience, to change with changing internal and external circumstances."

Feedback is the process which enables an organization to obtain information about actions taken, their outcomes, and the reasons therefor. It is the process whereby an organization evaluates actions taken, and learns from them so that changes in its activities can be made and performance may be thus improved.

More specifically, Feedback includes those activities that assist the unit to evaluate the results of its actions and provide information about such results to be used in future planning and decision making. They include the process of obtaining feedback about actions taken, but they also include internal efforts to evaluate such actions so that the unit can learn from its successes and mistakes, and actions to adjust future activities accordingly.

The essence of the Feedback process is conscious and planned efforts to systematically obtain knowledge of results and to use such data as bases for learning to improve battle staff and unit operations. There is now considerable evidence that planned, systematic efforts to obtain and use feedback are important elements in organizational improvement.

Thus, the planning of feedback is critical and should be accomplished more or less simultaneously with, or immediately after, the formal planning of operations. Determination of the proper methods for obtaining feedback in a particular exercise or

operation may be a critical aspect of feedback planning. Accordingly, special knowledge of feedback techniques may be required.

Because of the requirement for specialized knowledge, as well as the fact that feedback activity may overburden task-force commanders and Operations Officers (S-3) preceding and during combat operations, it may be necessary to assign a responsible officer, e.g., the task force executive officer, to a special role for Competence evaluation and training (see Chapter VIII for a discussion of this role). Responsibilities of this officer could include planning and direction of Feedback activities.

Like all other processes, Feedback is part of a repetitive cycle. Accordingly, Feedback activities should be more or less continual efforts that become integral parts of battle staff routines.

a. Quality Requirements

Following are some general questions to be asked in considering Feedback:

- (1) Was action taken to obtain information about the outcome of decisions and actions?
- (2) Was the information that was obtained in follow-up or feedback actions later used to modify operations or to make new plans or decisions?

B. BATTLE STAFF EFFECTIVENESS

As described in preceding chapters, a battle staff is a role system that is driven and controlled by operational (task) demands and maintained by shared values and norms. Members plan and supervise execution of a unit's operations through performance of the several organizational functions (processes) included in the concept of Organizational Competence. The people in the system have various motivations and attitudes, and perform certain activities (processes) in certain ways. The ways battle staff members perform the processes are, in part, determined by how they perceive the organization, other members, themselves, and their roles; in part, by their motivations; and, in part, by their skills in performing their roles and the processes dictated by role and operational demands.

In short, battle staff effectiveness is determined by:

- (1) The skills of each member in performing, both individually and collectively, the various organizational processes dictated by operational and task demands, and

- (2) Battle staff integration--the extent to which the roles, perceptions, motivations, and activities of all battle staff members are melded into a unified whole.

1. A Battle Staff Effectiveness Model

To develop a battle staff that is effective, leadership and training efforts should be addressed to the above elements and relationships. Figure IX-1 shows a Battle Staff Effectiveness Model that includes both the developmental sequences and the relationships between the elements that appeared in both the Competence Model and the Integration Model discussed in Chapters V and VIII respectively.

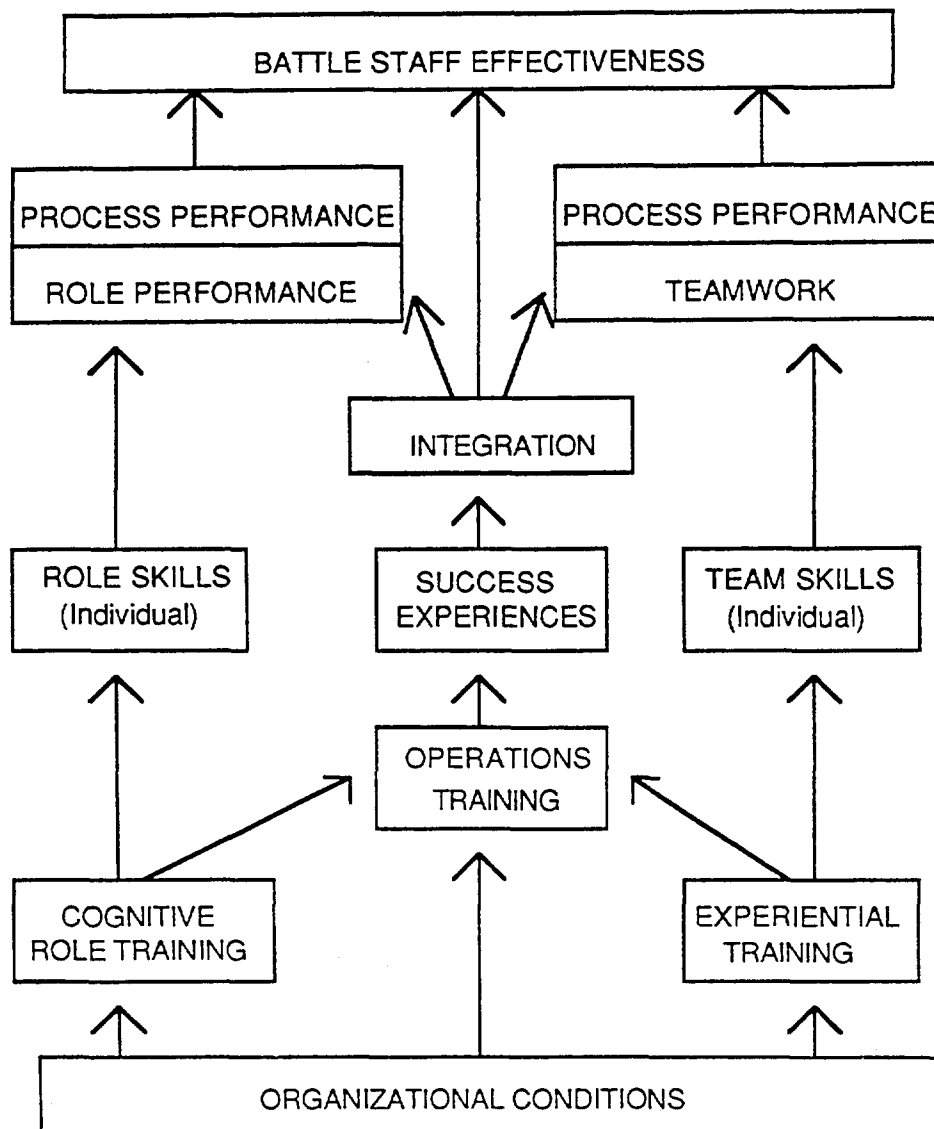


Figure IX-1. Battle Staff Effectiveness Model

a. Organizational Conditions

In Figure IX-1, Organizational Conditions are shown as the foundation upon which all developmental efforts rest. The socio-psychological conditions within an organization constitute the fundamental context within which all personnel perform their duties and functions. In military usage, they sometimes have been called "leadership conditions" because it is assumed that leaders create and are responsible for the state of such conditions within their units.

Regardless of the label given to them, socio-psychological conditions within a battle staff have been found to exert significant effects upon role performance, integration, and teamwork. Sound and healthy organizational conditions provide a solid underpinning for all efforts to develop and maintain effective battle staffs. If conditions are not sound and healthy, the likelihood of effectiveness will be reduced considerably.

In the Effectiveness Model depicted in Figure IX-1, organizational conditions are shown to impact upon Cognitive Role Training, Experiential Training, and Operations Training, as well as upon performance of the skills that should be produced by such training.

b. Cognitive Role Training

This type of training involves straightforward instruction designed to inform participants about the requirements and duties of all battle staff roles, and, most important, to provide intensive instruction about Organizational Competence, the organizational processes, and their performance requirements.

As depicted in Figure IX-1, Cognitive Role Training produces the fundamental skills needed by individual battle staff members to perform their respective roles. In turn, Individual Role skills determine the effectiveness with which each battle staff member executes his role, including his process performance.

Cognitive Role Training also feeds into Operations Training by influencing the performance of members' roles during battle staff Operations Training.

c. Experiential Training

Experiential Training (Practical Exercises, Simulations, etc.) are designed to provide individuals with practical experience in role performance and in working in team contexts. The products of such training should be reinforced role skills and individual

coordinative and team skills. The resultant team skills contribute to teamwork and team process performance. In addition, the team skills developed by individuals in experiential training should feed into operations training, where team and individual role skills are brought together and practiced.

d. Operations Training

Here "operations training" refers to all types of training in which a battle staff functions, exercises, and practices *as a unit*, either separately from or together with the remainder of the battalion or task force. In such programs, opportunities are provided for practice of role and team skills, and, through these common experiences, for the natural development of integration within a battle staff.

e. Integration

Through the exercise of role and team skills within common settings, and through the reinforcement that comes from group success experiences, operations training, when conducted properly, can produce the team norms and values that are essential for the development of battle staff integration. When norms and values for teamwork are highly developed, they serve as melding forces for the integration of structure, function, and roles. They exert strong influences upon the ways that battle staff members perform their roles and practice teamwork.

When it is recalled that Integration derives from the team norms and values held by battle staff members, it should be apparent that both individual role performance and teamwork can be influenced by Integration. Team-oriented values will guide the actions of battle staff members toward coordinative behavior as they go about performing their respective roles. On the other hand, norms that have developed within the staff may serve as behavioral standards for determining when teamwork is required and for enforcing team-oriented behavior.

f. Role/Process Performance

Figure IX-1 shows that Role Performance results from Individual Role Skills and Integration. Role Performance is the execution of the duties and requirements of the several positions that make up a battle staff. As indicated in Figure IX-1, the extent to which each role is performed is determined by (1) the skills of the individuals who occupy the several battle staff positions, and (2) the amount of integration in the battle staff.

Battle Staff role performance is manifested, in large part, through performance of the processes that comprise Organizational Competence. This relationship is shown in Figure IX-1, with process performance leading to Battle Staff Effectiveness.

g. Teamwork/Process Performance

Figure IX-1 shows that teamwork results from (1) the team skills of individual battle staff members and (2) the integration existing within the battle staff. Team skills provide the capabilities, and integration enhances motivation for teamwork.

As with role performance, teamwork is most often manifested through execution of the processes that comprise Organizational Competence. Thus, Battle Staff Effectiveness results from (1) performance of organizational processes based upon individual role performance and teamwork, and (2) Battle Staff Integration.

h. Utility of the Model

The Battle Staff Effectiveness Model shown in Figure IX-1 depicts both relationships and the sequencing of the various elements required for the development of effectiveness. It might be possible to approach effectiveness through simple, random on-the-job experience; however, the most efficient and most cost-effective way to insure maximum effectiveness is to develop and train a battle staff in a carefully-planned sequence such as that shown in Figure IX-1.

C. DEVELOPING INTEGRATION

In Chapter VI, an Integration Model was described. In that model, it was shown that Battle Staff Integration depends upon two classes of elements: (1) necessary organizational conditions, and (2) necessary developmental activities. Figure IX-1 in this chapter shows the relationships between these two classes of elements and between them and process performance. Here, the discussion will be devoted to ways of developing an integrated battle staff through the enhancement of these two classes of conditions.

1. Necessary Organizational Conditions

Briefly, those "necessary" organizational conditions required for the development of integration and teamwork are:

- (1) A clear role system.
- (2) Common superordinate goals.

- (3) A reward system for teamwork.
- (4) A stable and efficient organizational system.

These four conditions should be considered to be the minimum required for development of integration within a battle staff. Attention to other organizational conditions may help to enhance integration; however, the above four conditions should be considered essential for all developmental efforts.

2. Necessary Developmental Activities

The developmental activities shown in Figure IX-1 serve two purposes. They are used to develop the role-specific team skills of individual battle staff members and, in addition, they provide the common experiences that are necessary for integration and, therefore, teamwork to develop among the members. Accordingly, "developmental activities" contribute to both Organizational Competence and Battle Staff Integration.

With respect to Organizational Competence, these activities provide straightforward instruction about Competence, its elements, and its performance requirements as well as hands-on practice in process performance. With respect to Integration, the developmental activities provide practice in performing within team contexts, common experiences which enhance team identification, and success in performing together as a battle staff.

The following discussion of the several developmental activities recommended for maximizing battle staff effectiveness applies to the development of both Organizational Competence and Battle Staff Integration. It is anticipated that all of the following developmental activities will be conducted within the unit as part of its internal training activities.

a. Cognitive Role Training

This is formal classroom training and should be designed to provide:

- (1) Knowledge about the organization and functions of a battle staff.
- (2) Knowledge about Organizational Competence, its rationale, and its essential components.
- (3) Knowledge about each organizational process, its definition, and its general criteria of effectiveness.
- (4) Knowledge about each battle staff position, its relation to Organizational Competence, the processes most likely to be performed in the position, and how they should be performed.

- (5) Knowledge about teamwork requirements in a battle staff, and command expectations about performance as a team.

The preferred method of instruction is lecture-discussion, with the overall objective of providing working knowledge of a battle staff, its roles, and Organizational Competence, its processes, and its effects upon battle staff performance. Training to mastery can be accomplished within approximately 15 hours of classroom instruction.

b. Experiential Training

This type of training is intended to provide practice, feedback, and critique to battle staff members in the performance of their respective roles within a team context. Through such experiences, knowledge obtained in Cognitive Role Training is reinforced and converted to individual Role-Specific Skills (Chapter IV)--those skills required by individual members in order for them to contribute effectively to the collective execution of team functions or team processes.

Experiential training for battle staffs should follow Cognitive Role Training and should consist of (1) Controlled Practical Exercises, (2) Open-Ended Practical Exercises, and (3) Simulations, in that sequence. All experiential training exercises should be designed to accomplish specific instructional objectives. At a minimum, the training plan for each exercise should include:

- (1) Statement of Instructional Objectives.
- (2) Practical Exercise or Simulation.
- (3) After-action analysis, feedback, and critique.

At a minimum, at least three exercises of each type of experiential training should be administered. Ideally, experiential training should be conducted to mastery of the following instructional objectives.

Each member of the battle staff should:

- (1) Know and be able to perform satisfactorily all role requirements for his own position.
- (2) Know the general role requirements for all other positions in the battle staff.
- (3) Be able to perform satisfactorily all coordinative requirements of his role.
- (4) Be able to execute satisfactorily all seven organizational processes, as appropriate for his own position.

- (5) In coordination with all other positions in the battle staff, be able to perform and adapt to requirements of varying task situations as required.

c. Operations Training

The rubric of "operations training" is used here to include all types of training in which a battle staff functions, exercises, practices, and gains experience under realistic conditions *as a unit*, either separately from or together with the remainder of the battalion or task force. Thus, "operations training" may include command post exercises (CPX), field training exercises (FTX), battle staff or full unit combat simulations, and other programs that are designed to provide practice and experience in battle staff combat operations. Such programs provide opportunities both for practice of role-specific and team skills, and through common experiences, for the natural development of integration within the battle staff.

Although some degree of cohesion may develop merely through casual, uncontrolled participation in routine operational field exercises, maximum integration will occur only when training is carefully planned to emphasize and challenge teamwork, and to encourage team identification and cooperative efforts through positive reinforcement of team successes.

Effective operations training should include the following activities:

1. Plan Training

- a. Plan tactical problems and scenarios that will:
 - (1) Teach and challenge tactical proficiency.
 - (2) Teach and challenge proficiency in Organizational Competence for the battle staff.
 - (3) Challenge and maximize team efforts and teamwork.
- b. Plan systematic procedures for observing battle staffs in operation.
- c. Develop and plan after-action review with feedback and analyses of tactical proficiency, Organizational Competence, and Battle Staff Integration.

2. Conduct Training

Effective operations training must consist of two activities and *neither can be effective without the other*.

- a. Conduct of the operation, or training problem.

- b. Systematic observation of focused activities, e.g., tactics, leadership, maneuver effectiveness, process performance.
3. Conduct feedback and critique based on systematic observation of performance.

Feedback and critique should be designed and conducted in non-coercive terms to accomplish constructive learning.

D. IMPROVING COMPETENCE IN BATTLE STAFFS

Although some battle staff effectiveness can be achieved solely from training team members to perform their separate roles (Individual Role-Specific Training) and inculcating requirements of performance as a team member (Individual Team Performance Training), the ultimate pay-off in battle staff integration and effectiveness can be achieved only through experience and practice in performing together as a team under conditions that are conducive to learning. Such conditions include:

- (1) Opportunities to experience realistically the changing demands of the battlefield--as they occur. (Operations training)
- (2) Opportunities to practice under realistic and safe conditions the role and team skills needed to meet the changing demands of the battlefield (Operations training). ("Realistic" conditions are those which generate battle staff behavior most like that on the battlefield. "Safe" conditions are those in which there is freedom to try new or different behaviors and to make mistakes without fear of punishment.)
- (3) Systematic observation and assessment of performance by personnel trained and experienced in the analysis of battle staff Competence and performance.
- (4) Learning-oriented after-action reviews based on observation and assessment, to include non-coercive and non-threatening feedback, critique, and team analyses of critical events and their implications.

1. Analyzing and Assessing Organizational Competence

The analysis and assessment of battle staff performance involves:

- (1) Observation of an organization under operational, or simulated operational, conditions.
- (2) Identification of trends, consistencies, and critical events in the performance of organizational processes.
- (3) Making judgments about how well the processes are performed.

- (4) Identification of reasons and sources of such performance, with special emphasis upon dysfunctional performance.

a. A General Framework for Analysis

Essential Questions. The essential questions to be answered in the analysis of Battle Staff Competence, are:

- (1) Overall, in relation to established assessment criteria, how well was each process performed during the exercise?
- (2) What were significant instances of dysfunctional performance?
- (3) Which processes, if any, were consistently inadequate? Why?
- (4) What impact did any noted dysfunctional processes have upon combat operations and outcomes?
- (5) Was consistently dysfunctional performance centered in any particular positions or levels in the battle staff?

To make such judgments, an assessor will require a general framework of questions for addressing what he is observing and some specific criteria for evaluating observed processes. General questions to be asked about each process appear as "Quality Requirements" earlier in this chapter and are also listed in Appendix A.

Define the Organization. The first step in preparing to make process observations is to identify and define the "organization" whose processes will be assessed. This is necessary because operational definition of the seven organizational processes requires specific knowledge of the boundaries of the organization to be observed. For example, as "the organization," an Army battalion would include all levels, personnel, and units normally included in the entire table of organization and it would be feasible to conduct a process analysis of the entire unit from highest to lowest levels--if sufficient observers were available. However, much more frequently, process analysis will be made of constricted "organizations," such as a battle staff (battalion commander, executive officer, staff, and company commanders) or a command group (battalion commander and staff). For the purposes of process assessment, these smaller segments would constitute "the organization," and the points of interaction between these groups and higher, lower, and adjacent levels would be the boundaries of the organization to be observed. It is extremely important to carefully define the "organization" that will be observed and to identify the boundaries of the observed "organization." Observations and assessments of processes should be made only within or at the boundaries of the identified organization.

After defining the boundaries of the organization to be observed, *identify all key elements within the organization*. "Key elements" are positions, personnel, or units that will be focal points in the flow of information, decisions, and actions during operations. For example, in a battalion battle staff, the key elements will probably be the commander, S2, S3, and the company commanders. Additional key elements may be the Executive Officer, S1, S4, Air Liaison Officer, Fire Support Coordinator (FSCOORD), and the Scout Platoon Leader. Other elements may be the main focal points for observation. Advance identification of probable key elements will enable observers to station themselves strategically in the TOC or CPs so as to be more likely to observe critical events and to trace the evolution of processes through the organization.

Identifying the Processes. In order to assess process performance within contexts of combat operations, an observer must be able to see and identify processes as they are occurring. The most difficult problem in assessment is to identify, accurately classify, and judge organizational processes as they occur. This requires translation of the general process definitions which appeared earlier to specific actions relevant for both field and simulated combat operations and the ability to discriminate between the different processes.

Appendix B contains operational definitions and criteria that may be used for identifying the seven processes. It should be understood, however, that the only means of becoming highly proficient is practice in observing and assessing actual battle staffs engaged in field or simulator training.

b. Assessing Battle Staff Competence

To assess the competence of a battle staff, it is necessary for observers or evaluators to make systematic judgments about how well the staff performs the organizational processes needed to make the unit effective. This assessment provides a commander with important information that is useful in both development and guidance of his battle staff. Criteria for assessing process performance are in Appendix C.

Qualitative Assessment. Assessment may be either *qualitative* or *quantitative*, or both. In assessment that is solely qualitative, observers make judgments about areas of strength or dysfunction and these analyses are used in after-action reviews and as diagnostic points to be used in planning future training. No numbers are attached to the judgments and no quantitative comparisons are made. Some examples are, "No efforts were made by any member of the battle staff to obtain on-the-ground intelligence (Sensing) after receipt of the Operations Order and prior to initiation of the attack, resulting in

unwarranted losses because of the lack of knowledge about recent changes in the size and position of opposing Forces," or "After the attack, notification of tactical decisions made by the commander, although appropriate to circumstances, were delayed beyond the time frame within which they would have been maximally effective (Timeliness of Decision Making)," or "The attached Armored Unit failed to stay in contact with Task Force Headquarters (Communicating Information)."

Quantitative Assessment. In quantitative assessment, observers assign numerical values (scores) to performance on the various processes. Thus, both Process scores and Competence scores (combined process scores) can be derived. A recommended Process Assessment Form appears in Appendix D. This form is to be completed by observers.

Use of quantitative assessment permits diagnostic comparisons between units or repeated measures of a single unit at different points in time. Repeated measurement of a unit makes it possible to gage improvements or degradations in performance and helps to keep track of changes or improvements in identified areas of deficiency.

Public comparisons of scores between units is not recommended. Such comparisons may generate unhealthy competition between units, thus damaging cohesion within the task force. Furthermore, quantitative scores of Organizational Competence should not be used for evaluation of personnel under any circumstances. Such evaluations would be too threatening, and thus destructive to battle staff integration.

Under no circumstances should battle staff assessment be used for coercive or punitive purposes. Assessment is conceived to be solely a device for development of Competence within a battle staff. An additional use is for pooling the judgments of multiple observers.

In after-action reviews, assessment scores should be used only in addition to qualitative evaluations as bases and starting points for discussions and planning of ways for improvement.

An Alternative Procedure. Where observers are not available or where it is desirable to compare members' assessments with observers', an alternative procedure is to obtain battle staff members' own assessments. A form that may be used for this purpose is shown in Appendix E. This procedure may be used as an alternative to observer assessment; however, it should be clearly understood that it may not be as accurate as the judgments of trained observers because it represents the personal viewpoints of participants.

The use of pooled (mean) member assessments will be especially useful as the basis for member-group discussions of process performance, the discussions to be part of after-action reviews led by the Executive Officer. Data (means) from the Member Competence Evaluation Form can serve as the starting point for group discussions and analyses of ways of improving process performance. Handled properly, the discussion should also enhance battle staff integration.

In this way, the procedure can serve a highly useful developmental function within a battalion.

2. Some Caveats

The development of an effective battle staff cannot be accomplished overnight, nor can it be achieved solely by exhortation or a few gimmicks, no matter how colorful. Battle staff integration and, therefore, organizational competence are developmental processes. They occur over time and most often result from systematic efforts to produce within the staff the competence skills and teamwork necessary for it to function as a unified system.

Battle staff competence and integration are not static. They do not "stay put" permanently. New leaders, personnel losses, successes, failures, and changed situations--all tend to bring about changes in daily practices within a team and in the norms and functional relationships that hold it together. Accordingly, developing and maintaining a strong battle staff must be a constant leadership endeavor.

X. CONCLUSION

In this report, we have attempted to accomplish two purposes:

- (1) To set forth a sound, research-based conceptual framework for understanding and addressing battle staff functioning and its relation to organizational effectiveness. After a review of relevant literature in Chapter III, a conceptual model centered around the rubric Organizational Competence was evolved and tests of it were reported (Chapter V). Findings were conclusive that processes identified in the model are strongly related to the effectiveness of combat units.

One aspect of this purpose was to develop a concept embracing the maintenance of battle staff structure and function under the heavy stress of combat. Together with Organizational Competence, this melding of structure and function constitutes Battle Staff Integration. After a review of relevant literature (Chapter IV), a model for Integration was derived and evaluated (Chapter VI).

- (2) To provide practitioners (military leaders, trainers, and performance analysts) with guidance for developing and directing effective battle staffs. Chapter II presented a practical rationale for understanding battle staff functioning. Models outlined the various elements that should be taken into account and controlled in order to improve battle staff performance (Chapters V, VI, IX).

This final chapter presents a concise general framework for addressing problems of battle staff performance and a summary of the elements involved in Battle Staff Effectiveness. The concept of organization that is presented is anchored squarely in Open Systems Theory; however, it also has roots in the social psychology of organizations.

This makes it possible to incorporate in a meaningful way elements from many sources--when it makes sense to do so. The concept of battle staff integration is derived mainly from small-group theory and research, and is also anchored in Open Systems Theory.

A. SOME BASIC CONCEPTS

A military unit is a human organization (referred to as "an organization") existing in physical and social environments over time. "Social environment" refers to those elements external to the organization in which there are other people (e.g., higher levels, adjacent

units, opposing forces). A human organization is a complex network of relationships among a number of people who are engaged in some activity for some purpose where the activity requires a division of effort and responsibility in such a manner as to make the members interdependent.

The "people" in the above definition are physical organisms and psychological processes. "Relationships among people" are states in which the activity and psychological state of one person is in a condition of mutual influence with another. A "network of relationships" is an abstraction of the relationships among a number of persons. The "influence" of a person is a function of his psychological properties (personality) and the properties of the coordinating and decision-making roles (rank, position) which he is assigned.

The boundary of an organization may be established by several means. Relative autonomy is one means of establishing boundaries. Another means is purpose and perceived membership. For military units, the existence of a commanding officer may be considered to define an independent organizational unit.

Purpose is defined as the relationship of the organization to the external physical and social environments. In military units, the assignment of a mission may be considered to indicate the existence of a purpose.

The mode of organization within a unit is, in part, determined by the elements of purpose, i.e., the mission dictates the method of distribution and execution of problem solving, decision making, and action functions (task organization). The distribution of the above functions and the assignment of authority and responsibility to go with them define the formal structure of the organization. The functions are arranged and systematized on the basis of ideas as to how they should be effectively performed and logically coordinated--on the basis of the "logics of organization" (Chapter II).

B . ORGANIZATIONAL EFFECTIVENESS

Organizational effectiveness is the accomplishment of missions or the achievement of objectives. Whatever its mission, the effectiveness of an organization requires that it efficiently identify, assess, solve, and cope with events or problems that arise within its operational environments. These are the classical functions of all organizations, and performance of them has always been critical for organizational success.

It is now clear that functional proficiency and the integration of command and control systems play important roles in the performance of all organizations. Projects FORGE and Cardinal Point II demonstrated conclusively the importance of Battle Staff Competence to the effectiveness of military ground tactical units. In two nationwide studies of city and county social welfare agencies (Olmstead and Christensen, 1973; Olmstead, Christensen, Salter, and Lackey, 1975), Organizational Competence was found to be closely related to effectiveness in both large and small civilian organizations. For both studies of civilian organizations, Integration (cohesion) was found to be related to organizational effectiveness.

In this regard, it is important to note that the above studies showed that Integration alone will not produce effectiveness. It only supports and sustains Competence, which is qualitative proficiency in the performance of critical organizational functions.

On the other hand, Competence without Integration can be a very tenuous attribute, subject to dissolution by all of the tensions and pressures that may arise from highly turbulent and stressful environmental conditions. Both Competence and Integration are essential for maximum organizational effectiveness.

1. Combat Units as Open Systems

It is useful to consider a combat unit as an organizational system. The basic notion of a system is that it is a set of interrelated parts. Implicit in the concept is a degree of "wholeness" which makes the whole something different from, and more than, the several parts considered individually and summatively.

One of the most significant ways in which the systems concept is useful is in the consideration of subordinate units as the parts of a system. This includes such units as companies, platoons, sections, squads, tank crews, etc., which appear on the conventional organization chart. Also included are staff sections, ad hoc committees, boards, and other groups that may have official or semi-official status but are frequently not shown on the chart.

Thinking of a unit as a system offers many benefits. Two, in particular, have special relevance for battle staffs. First, it focuses on the relatedness of activities carried on by different individuals and units, and it emphasizes the fact that, to meet the specific requirements of a particular mission, each of the subunits of which the command is comprised must receive as careful attention in its preparation and during its operations as

does the overall command. This is important because each part of a system affects and is affected by every other part.

Second, thinking of a combat unit as an open system focuses attention upon its interaction with its environments and, more important for battle staffs, upon the processes involved in adapting to and coping with changes in the environments. When made operational, such processes provide a powerful means for using systems concepts to assess and improve battle staff performance.

Systems Theory embraces a much more comprehensive set of concepts than is possible to cover here; however, a brief review of Bennis's abbreviated approach (Chapter III) will provide insight into the application of Systems Theory to any organization. According to Bennis, successful organizations need three basic attributes:

- (1) *Reality Testing.* The capacity to test the reality of situations facing the organization--the ability of the organization to search out, accurately perceive, and correctly interpret the properties and characteristics of its environments (both external and internal), particularly those properties which have special relevance for the operations of the organization. In short, every organization must have the capability for accurately determining the real conditions within its important environments. "Reality" refers to the way conditions are--not how they are supposed to be nor how they are desired to be.

To survive, every organization must have structures and processes that will enable it to assess the reality demands of its particular environments.

Reality Testing involves the Competence processes of SENSING, COMMUNICATING INFORMATION, and FEEDBACK.

- (2) *Adaptability* The capability for solving problems arising from changing environmental demands and to act with flexibility in response to the changing demands. *Each organization must have structures and processes that will enable it to mobilize the necessary and appropriate resources for adapting to and overcoming changes in its environments.*

Adaptability involves the Competence processes of DECISION MAKING, COMMUNICATING IMPLEMENTATION, and COPING (executing).

- (3) *Sense of Identity.* Knowledge, insight, and a reasonable consensus on the part of organizational members regarding organizational objectives, missions, and the functions necessary for accomplishment of objectives and missions. In terms of the models proposed in this report, this concept leads to Integration, which is defined as "the maintenance of structure and function under stress and a state of relations among sub-units that insure that coordination is maintained

and the various subunits do not work at cross purposes." *Integration derives from a sense of identity. During operations, Integration involves the Competence process of STABILIZING, but is mainly developed from experiences occurring during training and from previous success experiences.*

Bennis's concepts above can be applied to any organization, regardless of type. These concepts, together with the processes derived from them, can be the starting point for understanding and improving the functioning of any organization.

2. Concept of Organizational Competence

The concept of *Organizational Competence* is a key element in this paper. The concept derives from the analysis of Open Systems Theory and concepts in Chapter III, especially those of Bennis (1966) and Schein (1965, 1970). It also derives from recognition that one of the most critical factors in the effectiveness of any organization is to sense impacting events in its external and internal environments, to process the information sensed, and to adapt its operations to cope with the sensed changes.

The ability of the organization to perform these critical functions is what is meant by "organizational competence." It is the capability of an organization to cope with the continuously changing demands of its critical environments.

It is further conceived that *Organizational Competence is the major operational determinant of organizational effectiveness. Where effectiveness is the ultimate outcome (mission accomplishment, achievement of objectives, productivity, etc.), competence is the capability of the organization to perform the critical functions (processes) that lead to achievement of effectiveness.*

C. COMPETENCE AS FLEXIBILITY

By now, it should be apparent that what is being discussed throughout this report is organizational flexibility. The crux of Organizational Competence is adaptability--and adaptability depends upon the capability of the organization to readily modify its operations as required by changes in its objectives, its missions, and its environments, i.e., upon its flexibility.

Many organizations are so bound by plans or procedures that they cannot efficiently or effectively modify activities to meet changed operational requirements. Efficient and effective performance of the processes subsumed under Organizational Competence make it possible for an organization to readily adapt to changed or new requirements.

The turbulent and unpredictable environments that are characteristic of the present and anticipated for the future place a premium upon the capability of organizations to respond flexibly to a more or less constant flow of situations of uncertainty. Under such conditions, organizations must possess capabilities for searching out, accurately identifying, and correctly interpreting the properties of operational situations--as they develop. They must also have capabilities for solving problems within the context of rapidly changing situational demands, for generating flexible decisions to cope with these situations, and for reacting to shifting situational requirements with precise appropriateness.

D. MILITARY ORGANIZATIONS

Military organizations are structures intended to function effectively in emergency situations. This is especially true for tactical units, where typical operational conditions include intense pressures from turbulent and rapidly changing environments. The purpose of these units is to cope with such pressures and overcome forces in the environments that generate the pressures.

This emphasis upon organizational responses to problem situations points up the role of the unit as problem solver, decision maker, and action taker. Although individual members actually perform the decision-making and action-taking activities, the necessity for global organizational responses makes it useful to think of the organization as a single entity engaged in these activities.

The overall function of a military organization is to take directed, unified action in an environment that presents a continuous flow of uncertainties. Its method is to coordinate the activities of its members so that all will be properly related and all will contribute to the ultimate mission.

The principal device for maintaining this effort is the chain of command, which runs through the heart of the unit from the topmost level to the lowest point of unit oversight. The various levels in the chain of command, together with staff roles designated to assist certain command positions, strive to control and coordinate information, decisions, and actions so that unified action will result.

The interaction whereby information, decisions, and actions are brought into conjunction involves a complex interplay between and among levels in the chain of command. *The constant interplay that occurs is the essence of organizational functioning.*

Management and control of the functioning are two of the more important responsibilities of battle staffs (command and control personnel). Although the overall responsibilities of a commander, his staff, and subordinate commanders are to "fight" their units, "good" tactics are only a part of these responsibilities. It is also a responsibility of the battle staff to ensure that it and all units and personnel function as needed to enable the unit to bring all of its parts together and to perform tactics as a united whole. *The seven processes of which Organizational Competence is comprised have been identified as functions that are critical for implementing tactics in a combat environment.*

The stability of the organization through time is obtained through a sufficient coincidence of the psychological fields of all of its personnel. However, in this regard, the shared perspectives of members of the battle staff are especially critical.

The battle staff serves as the brain and nervous system of a combat unit (see Chapter II). When a combat unit is viewed as an open system, members of the battle staff are the gatekeepers, controllers, and directors of the organizational processes previously discussed as critical to the effectiveness of all units. Accordingly, the stability of the unit in relation to its mission, its objectives, and the performance of critical processes is obtained through a sufficient coincidence of the psychological fields of the members of the battle staff. For a combat unit to be maximally effective, shared understandings among battle staff members are essential. A common means of communication, a common acceptance of purposes and sub-purposes, a common acceptance of the distribution of duties and responsibilities, and a common motivation to do whatever is needed are required for effective performance as a battle staff. Thus, battle staffs are sub-systems of larger organizational systems, and are, in themselves, open systems, subject to all of the variability and constraints imposed upon larger systems.

E. BATTLE STAFF INTEGRATION

It is apparent that numerous factors play a part in determining whether the system processes are performed effectively and whether they will be resistant to disruption under pressure. Knowledge, experience, and skills of personnel, especially those of members of the battle staff, will influence functioning of the processes. Furthermore, standard operating procedures and contingency plans reduce the potentiality for disruption. However, there is a vital aspect of organizational experience that cannot be understood as codified procedures, routine functions, personal characteristics, or formal organizational relationships. This aspect involves more than simple activity. Rather, it involves the

interaction of individuals and groups which results in shared understandings and common perspectives. In this interaction, such as occurs between members of a well-functioning battle staff, there is no simple one-to-one relation between an isolated cause and effect. Instead, there is a more or less continuous process of action and reaction. Over time, the product of this interaction is a condition that is critical for the maximally effective functioning of organizational processes. For this report, the condition has been termed *battle staff integration*.

Battle staff integration is closely related to, if not identical with, "teamness." Accordingly, it is most practicable to develop an approach to battle staff integration within the general context of teamwork. Such an approach provides an entree into the dynamics of integration and team performance that has so far escaped most researchers concerned with teams and team improvement.

Following are several definitions and two premises. The definitions are:

- (1) A *team* consists of (a) at least two people, who (b) are working toward a common goal/objective/mission, where (c) each person has been assigned specific roles or functions to perform, and where (d) completion of the mission requires some form of dependency among the group members.
- (2) *Teamwork* is activities performed by team members in such a manner that each activity is coordinated with every other one and contributes to the superordinate goals of the unit or supports the activities of other members.
- (3) *Battle Staff Integration* is the force which melds together the roles, attitudes, and activities of the members. This force maintains function and structure within the battle staff.

The premises are:

- (1) To be effective, a battle staff must perform as a unified social system which executes competently all of the organizational functions (processes) needed to enable a combat unit to adapt to and cope with every condition presented by its battlefield environments.
- (2) Maximally effective performance of a battle staff as a unified system requires full integration of members' roles, attitudes, and activities.

After close scrutiny of most of the simple system models proposed for machine-based teams in the literature, it was concluded that a more complex system model will be required if battle staff integration is to be completely understood. Accordingly, the concept of *Role System* is proposed as more suitable.

A Role System is an open social system whose structure consists of a set of roles which are defined by the task demands placed upon the system. In turn, the system is maintained by norms and values held in common by all or most of its members.

Accordingly, a battle staff is a role system, driven and controlled by operational (task) demands and maintained by shared values and norms. The "roles" of the system are the official positions occupied by members of the battle staff, together with both the formal duties and informal expectations associated with each position. Integration is the force which melds the activities of members; it accomplishes this melding through norms and shared values held by members of the battle staff. The strength, or degree, of integration that exists in the battle staff is dependent upon the level and nature of cohesion within the battle staff and the parent unit.

Battle staffs function in highly "emergent" situations of the modern battlefield. This functioning requires at least the following:

- (1) *Role-Specific Individual Skills*, which are the skills required by the various battle staff members to perform those activities specific to the respective battle staff roles and which are performed independently of other team members. In battle staffs, these skills include performance of the several organizational processes discussed under the rubric of Organizational Competence.
- (2) *Team Performance Skills*, which are the skills of individual members needed to contribute to the collective execution of team functions or team processes, e.g., the skills of coordination, which are performed interdependently with other team members.
- (3) *Integration*, which is the force that melds the roles, attitudes, and activities of the members. In other terms, "integration" is based upon the cohesion, or cohesiveness, of the battle staff.

Both Role-Specific Individual Skills and Team Performance Skills are trainable and are susceptible of improvement through exposure to formal individual and team training programs. On the other hand, Integration is an attribute of a team which influences the attitudes, norms, and behavior of team members, and, therefore, when present in appropriate amounts, enhances unity within the system and focuses individual and team skills upon the task requirements of the system.

1. Factors Affecting Integration

Following are brief discussions of the major factors that influence battle staff integration and performance.

a. Roles

The concept of role is a principal means for explaining individual behavior in organizations and for linking such behavior to the organizational processes. Roles are at once the building blocks of organizational systems and the frameworks of requirements with which such systems control their members as individuals. Each person in an organization is linked to other members by the functional requirements of his role, which are implemented through the expectations those members have of him. It is important to stress that roles are ideational, i.e., they are ideas about how behavior ought to occur, rather than being the actual behavior.

The functioning of organizational processes appears to be determined in large part by the role perceptions of individuals in key positions--in this case, by members of the battle staff. The problem-solving, decision-making, and adapting processes are affected by the extent to which there are clear, accurate, and shared perceptions of role requirements by all members of the team.

b. Goals

Organizations face the problem of adapting to environmental change without losing their basic character and distinctive capabilities. On the one hand, if the goals around which activities are mobilized are adhered to despite environmental change, there may be losses and inefficiencies, or even threats to survival. On the other hand, if goals are changed too frequently, there is the risk of members' losing sight of the principal mission of the unit.

The importance of goals lies in the necessity for the efficient conduct of complex unit activities and for keeping activities on the track. When goals are clear, operational, and shared, and when personnel are emotionally committed to their accomplishment, misperceptions, conflicts, false starts, cross-purposes, and wasted effort are kept to a minimum. The overall (superordinate) objectives of the organization, the objectives of subordinate units, and the goals of the battle staff will be in general harmony, and all will be aimed toward accomplishing the mission of the organization. In turn, this should result in more efficient functioning of the organizational processes.

c. Norms

An often neglected set of requirements in organizations and in teams such as battle staffs includes those actions not specified by role prescriptions (job descriptions) but which

facilitate the accomplishment of organizational objectives. Any organization's need for some actions of a relatively spontaneous sort is inevitable. Planning, standard procedures, and role prescriptions cannot foresee all contingencies and cannot anticipate all environmental changes that may occur. The resources of personnel for innovating and for spontaneous cooperation are thus vital to effective functioning. However, this spontaneous behavior requires some control to funnel it into organizationally approved channels. This control cannot be provided by the more formal role prescriptions. Norms serve this function.

Norms are attitudes and codes of behavior held in common by all, or most, of the team members. When well developed, this superstructure of customs, standards, and values regulates the behavior of members and provides them with the bases for assessing nonroutine situations and for governing their actions in such situations, where no official guidance is available.

It is evident that the patterned activities which make up the organizational processes are so intrinsically cooperative and interrelated that the kinds of norms which develop must inevitably influence their functioning. *This influence will be most likely in terms of the extent to which team members execute the process functions above and beyond the minimal limits prescribed by formal role prescriptions.*

d. Group Relations

When team members work together toward common objectives over time, role structures, norms, and patterns of interaction develop. These group attributes exert a lasting influence upon the ways that members go about their tasks, the levels of motivation that are achieved, and the extent to which a sense of identity develops within the team and the organization. A Sense of Identity is Bennis's third ingredient of organizational health and, when highly developed, it contributes to the evolution of integration within a team.

Group relations influence the performance of organizational processes in at least two ways. First, group relations determine the extent to which team members develop shared perspectives concerning organizational problems and practices. Second, group relationships influence the motivation of members to perform the activities related to organizational processes.

Cohesion is the major element in determining the impact of group relations upon the development of norms, values, and stable role structures, and upon team performance.

The "cohesiveness," or "cohesion," of a group refers to feelings of solidarity and pride that exist among the members of a team. Cohesiveness is central to any undertaking to develop teamwork; however, the relationship between cohesiveness and team effectiveness is not simple. A team will not necessarily be effective from the organization's viewpoint merely because it is highly cohesive. An additional essential requirement involves strong norms that value high quality performance, or, in other terms, "integration" with organizational requirements and organizational structure and function.

In general, integration will be enhanced through the existence of conditions that cause battle staff members to develop common perceptions of events and problems, to evolve shared perspectives of themselves and their unit (Identity), and to become consistently and harmoniously committed to the activities and objectives of the unit. Such conditions are specified below.

2. Teamwork

Teamwork in battle staffs depends upon the effective performance of role-specific individual skills and team performance skills. Both types of skills are driven and controlled by battle staff integration. *That is, in addition to the proficiency of individuals, they depend upon cohesion.*

The general conditions necessary for the development of cohesion and teamwork in battle staffs are:

- (1) Superordinate objectives which are meaningful, clear, and desired by all, i.e., *common objectives conducive to cooperation.*
- (2) *A stable and efficient organizational system* which provides effective operating procedures, efficient patterns of communication, and efficient, closely-coordinated teamwork.
- (3) *A system of potential rewards* for contribution to team efforts.
- (4) *Shared norms* of performance and behavior.
- (5) *Shared experiences of success.*

The purposes served by the above conditions are:

- (1) Clear superordinate objectives and a meaningful system of rewards focus efforts upon common aims and motivate members to cooperate and coordinate.
- (2) An efficient organizational system channels motivation to cooperate into effective actions.

- (3) A stable system provides continuity of personnel and, hence, the opportunity to develop shared experiences.
- (4) Shared experiences of success enhance a positive unit identity.
- (5) Shared norms of performance and behavior provide standards for action in emergent situations.

Taken together, these elements combine to provide a supportive climate within a team (Griffith, 1988; Griffith, 1989) that enhances the members' capabilities for resisting pressure and for performing proficiently under the stress of combat. Battle staff integration is the overriding force which melds the roles, norms, and activities and, therefore, exercises overall influence over cooperative and coordinative activities within the battle staff. Furthermore, integration provides battle staffs with the internal strength to resist forces destructive to the effective performance of essential organizational functions (processes).

3. Training and Development

It is important to recognize that Battle Staff Integration, to include the processes discussed here, is an attribute of an organization, not of roles or of individuals. This fact is important because it governs how one views an organization and whether performance is analyzed, assessed, and developed as an attribute of individuals, groups, or entire units. On the one hand, if a commander views process performance as an attribute of individuals or of particular roles (positions), he will devote all of his efforts to individual training. On the other hand, if he recognizes that performance of processes is an attribute of organizations, he will devote his efforts to development of the battle staff as a unified whole.

Organizational Competence represents the capability of the organization and is different from individual capabilities. Although most often performed by single individuals, processes involve organizational responses and the quality of any single response event is determined by the entire network of antecedent relationships and responses. Thus, Battle Staff Competence and Integration can best be improved by efforts that focus upon developing the organization to function as a system.

Procedures for analysis and development of Competence and Integration were set forth in Chapter IX.

F. RAPID-RESPONSE ORGANIZATIONS

Army and Marine tactical units are examples *par excellence* of "rapid-response" organizations. "Rapid-response" units are organizations that must identify and adapt effectively to events that occur in fast-changing and uncertain environmental conditions. Other examples of military rapid-response organizations are Navy fire-direction and fire-control centers and Air Force tactical control centers.

In civilian contexts, examples of rapid-response organizations are civil-disaster organizations, and police, fire, and forest-fire command centers. All such units are organizations that must collectively and continually adapt to uncertain, hostile, and fast-changing conditions.

In both military and civilian rapid-response organizations, each unit is governed by a command and control group closely resembling a battle staff. Furthermore, effectiveness is, in large part, determined by the execution of processes quite similar to those performed by military battle staffs.

The conceptual models described in this report (Chapters V and VI) are applicable to all types of rapid-response organizations. Similarly, the development and training procedures described in Chapter IX are appropriate for most such organizations with only minor modifications.

G. OTHER ORGANIZATIONS

Upon careful examination of Bennis's concepts, it becomes apparent that they can be applied to any organization, regardless of type. These concepts (Reality Testing, Adaptability, Identity), together with the seven processes derived from them, can be the starting point for understanding and improving the functioning of any organization. The seven processes include all of the essential general functions performed by all organizations. Aside from the types of environments encountered, the kinds of activities in which they engage, and the particular stresses that arise from the dangers and pressures of combat, the greatest difference between tactical units and other organizations, both military and civilian, is in the time frames within which problems occur and must be solved.

In contrast to rapid-response units, the time spans for operations and problems in more conventional organizations may extend over weeks, months, or even years, and problems may overlap so that it is difficult to know where one begins and another ends. In combat, the operations of tactical units are usually more clearly demarcated and shorter in

duration. These differences make processes in non-emergency organizations somewhat more ambiguous, often complex, and sometimes difficult to trace.

Nevertheless, the seven processes that comprise Competence include all of the essential functions performed by any organization, and, with care, they can be identified and traced. Accordingly, attention to Competence warrants major effort in any program intended to improve organizational effectiveness.

Attention to Competence appears to be especially important in civilian organizations because of increasing needs to adapt to changing conditions in civilian life. The increasing rapidity with which change is occurring in modern society makes it essential for most types of organizations to learn to adapt flexibly to continuously fluid conditions. Such adaptation should occur with minimal internal turbulence. Notable examples are requirements for the military establishment to adapt to changed or reduced threat to national security, to changed sources of its personnel from draft to volunteer, and to new values in society. Similar are requirements for aerospace firms to remain viable despite reduced services required by military and space agencies.

Almost every industrial firm is faced with the necessity of accommodating to rapidly shifting markets, increased competition, fast changing technology, and heightened public concern about pollution, ecology, and damage to the environment. Governments must stay abreast of their citizens' needs and desires. Even educational institutions must constantly modify goals and operations to meet the demands of constantly shifting constituencies.

Under such conditions, the survival of an organization requires fine sensitivity to the often subtle cues provided by critical environments, the ability to read such cues promptly and interpret them accurately, and the capacity for rapid but efficient modification of internal operations so that new developments can be met and mastered--as they arise. Inadequacy in these capabilities can result in failure or destruction of the organization.

REFERENCES

Albert, R.S. "Comments on the Scientific Function of the Concept of Cohesiveness." *American Journal of Psychology*, 59, 1953, pp. 231-234.

Alexander, L.T., and A.S. Cooperband. *System Training and Research in Team Behavior*. TM 2581. System Development Corp., Santa Monica, Cal., 1965.

Allport, F.H. "A Structuronomic Conception of Behavior: Individual and Collective. I. Structural Theory and the Master Problem of Social Psychology." *Journal of Abnormal and Social Psychology*, 64, 1962, pp. 3-30.

Altman, I. "The Small Group Field: Implications for Research on Behavior in Organizations." In R.V. Bowers, Ed., *Studies on Behavior and Organizations: A Research Symposium*. University of Georgia Press, Athens, Georgia, 1966.

Argyris, C. *Personality and Organization: The Conflict Between System and the Individual*. Harper & Bros., New York, 1957.

Argyris, C. *Interpersonal Competence and Organizational Effectiveness*. Irwin-Dorsey Press, Homewood, Ill., 1962.

Back, K.W. "Power, Influence, and Pattern of Communication." In L. Petrullo and B.M. Bass, Eds., *Leadership and Interpersonal Behavior*. Holt, Rinehart & Winston, New York, 1961.

Barnard, C.I. *The Functions of the Executive*. Harvard University Press, Cambridge, 1938.

Bavelas, A. "Communication Patterns in Task-Oriented Groups." In D. Cartwright and A. Zander, Eds., *Group Dynamics: Research and Theory*. Row, Peterson, Evanston, Ill., 1953, pp. 493-494.

Benne, K.D., and P.D. Sheats. "Functional Roles of Group Members." *Journal of Social Issues*, 4, (2), 1948, pp. 41-49.

Bennis, W.G. *Changing Organizations: Essays on the Development and Evolution of Human Organizations*. McGraw-Hill Book Company, Inc., New York, 1966.

Berkowitz, L., and B.I. Levy. "Pride in Group Performance and Group-Task Motivation." *Journal of Abnormal and Social Psychology*, 53, 1956, pp. 300-306.

Blake, R.R., and J.S. Mouton. "The Intergroup Dynamics of Win-Lose Conflict and Problem Solving Collaboration in Union-Management Relations." In M. Sherif, Ed., *Intergroup Relations and Leadership: Approaches and Research in Industrial, Ethnic, Cultural, and Political Areas*. John Wiley & Sons, Inc., New York, 1962, pp. 94-140.

Blake, R.R., and J.S. Mouton. *The Managerial Grid*. Gulf Publishing Co., Houston, 1964.

Blau, P.M. "Co-Operation and Competition in a Bureaucracy." *American Journal of Sociology*, 59, 1954, pp. 530-535.

Blau, P.M., and W.R. Scott. *Formal Organizations: A Comparative Approach*. Chandler Publishing Co., San Francisco, 1962.

Boguslaw, R., and E.H. Porter. "Team Functions and Training." In R.H. Gagne, Ed., *Psychological Principles in Systems Development*. Holt, Rinehart & Winston, New York, 1962, pp. 387-416.

Bolger, D.P. *Dragons at War: 2-34 Infantry in the Mojave*. Presidio Press, Novato, Cal., 1986.

Bonner, H. *Group Dynamics: Principles and Applications*. The Roland Press Company, New York, 1959.

Bowers, R.V., Ed. *Studies in Organizational Effectiveness: Contributions to Military Sociology*. Air Force Office of Scientific Research (Office of Aerospace Research), Washington, D.C., 1962.

Bradley, O.N. *A Soldier's Story*. Holt, Reinhart, & Winston, Inc., New York, 1951.

Brayfield, A.H., and W.H. Crockett. "Employee Performance." *Psychological Bulletin*, 52, 1955, pp. 396-424.

Briggs, G.E., and W.A. Johnston. *Team Training*. Technical Report: NAVTRADEV-CEN 1327-4. Ohio State University, Human Performance Center, Columbus, Ohio, 1967.

Burns, T., and G.M. Stalker. *The Management of Innovation*. Tavistock Publications, London, 1961.

Cartwright, D. "Power: a Neglected Variable in Social Psychology." In D. Cartwright, Ed., *Studies in Social Power*. The Institute for Social Research of the University of Michigan, Ann Arbor, 1959, pp. 235-251.

Cartwright, D., and A. Zander. *Group Dynamics: Research and Theory*. Row, Peterson & Co., Evanston, Ill., 1953.

Cartwright, D., and A. Zander. *Group Dynamics: Research and Theory* (2nd ed.). Row, Peterson & Co., Evanston, Ill., 1960.

Clarke, B.C. "Faulty Staff Relations." *Military Review*, 43 (4), 1963, pp. 3-6.

Coch, L., and J.P.R. French, Jr. "Overcoming Resistance to Change." *Human Relations*, 1, 1948, pp. 512-532.

Collins, J.J. *A Study of Potential Contributions of Small Group Behavior Research to Team Training Technology Development*. Essex Corporation, Alexandria, Va., 1977.

Cyert, R.M., and T.G. March. "The Behavioral Theory of the Firm: A Behavioral Science-Economics Amalgam." In W.W. Cooper, H.J. Leavitt, and M.W. Shelly, Eds., *New Perspectives in Organizational Research*. John Wiley & Sons, Inc., New York, 1964, pp. 289-304.

Dalton, G.W., P.R. Lawrence, and J.W. Lorsch. *Organizational Structure and Design*, Irwin-Dorsey, Homewood, Ill., 1970.

Deep, S.D., B.M. Bass, and J.A. Vaughn. "Some Effects on Business Gaming of Previous Quasi-T-Group Affiliations." *Journal of Applied Psychology*, 51, 1967, pp. 426-431.

Deutsch, M. "An Experimental Study of the Effects of Cooperation and Competition upon Group Processes." *Human Relations*, 2, 1949, pp. 199-231.

Deutsch, M. "Some Factors Affecting Membership Motivation and Achievement Motivation in a Group." *Human Relations*, 12, 1959, pp. 81-95.

Deutsch, M., and H. Gerard. *Problems in Staff Relations: An Experience Survey*. Research Memorandum No. 23, Air Research and Development Command, Human Research Institute, Maxwell Air Force Base, Alabama, 1953.

Drabek, T.E. "Laboratory Simulation of a Police Communication System Under Stress." Unpublished dissertation. The Ohio State University, 1965.

Dubin, R. "Decision-making by Management in Industrial Relations." *American Journal of Sociology*, 54, 1949, pp. 292-297.

Dubin, R. "Stability of Human Organizations." In M. Haire, Ed., *Modern Organization Theory*. John Wiley & Sons, Inc., New York, 1959.

Dyer, J.L. *The Initial Training of Individual and Team Skills: An Exploratory Investigation of Engineer Bridge Specialists*. A.R.I. Working Paper FBNG FU 80-1. U.S. Army Research Institute for the Behavioral Sciences, Alexandria, Va., 1980.

Dyer, J.L. *Annotated Bibliography and State-of-the-Arts Review of the Field of Team Training as it Relates to Military Teams*. U.S. Army Research Institute for the Behavioral Sciences, Alexandria, Va., 1985.

Edwards, W. "The Theory of Decision Making." *Psychological Bulletin*, 51, 1954, pp. 380-417.

Emery, F.E., and F.L. Trist. "The Causal Texture of Organizational Environments." *Human Relations*, 18, 1965, pp. 21-32.

Festinger, L., S. Schacter, and K. Back. *Social Pressures in Informal Groups: A Study of Human Factors in Housing*. Harper, New York, 1950.

Gellerman, S.W. *Motivation and Productivity*. American Management Association, New York, 1963.

George, C.E., G.R. Hoak, and J. Boutwell. *Pilot Studies of Team Effectiveness*. Research Memorandum No. 28, Human Resources Research Office, Alexandria, Va., 1963.

Gill, D.L. "Cohesiveness and Performance in Sport Groups." In R.S. Yeeton, Ed., *Exercise and Sports Sciences Review* (Vol. 5). Journal Publishing Affiliates, Santa Barbara, Cal., 1977.

Grace, H.A. "Conformance and Performance." *The Journal of Social Psychology*, 40, 1954, pp. 33-335.

Greenbaum, C.W. "The Small Group Under the Gun: Uses of Small Groups in Battle Conditions." *Journal of Applied Psychology*, 15, 1979, pp. 392-405.

Griffith, J. "Measurement of Group Cohesion in U.S. Army Units." *Basic and Applied Social Psychology*, 6, 1988, pp. 51-60.

Griffith, J. "The Army's New Unit Personnel Replacement and Its Relationship to Unit Cohesion and Social Support." *Military Psychology*, 1, 1989, pp. 17-34.

Gross, E. "Primary Functions of the Small Group." *American Journal of Sociology*, 60, 1954, pp. 24-29.

Guetzkow, H. "Communications in Organizations." In J.G. March, Ed., *Handbook of Organization*. Rand McNally, Chicago, 1965, pp. 534-573.

Hackman, J.R., and C.G. Morris. "Group Tasks, Group Interaction Process, and Group Performance Effectiveness: A Review and Proposed Integration." In L. Berkowitz, Ed., *Advances in Experimental Social Psychology* (Vol. 8). Academic Press, New York, 1975, pp. 45-99.

Haire, M. "Biological Models and Empirical Histories of the Growth of Organizations." In M. Haire, Ed., *Modern Organization Theory*. John Wiley & Sons, Inc., New York, 1959.

Hall, E.R., and W.A. Rizzo. *An Assessment of U.S. Navy Tactical Team Training*. Training and Evaluation Group, Orlando, Fla., 1975.

Halsey, W.F., and J. Bryan, III. *Admiral Halsey's Story*. McGraw-Hill Book Company, Inc., New York, 1947, p. 227.

Harrell, T.W. *Industrial Psychology* (rev. ed.). Rinehart, New York, 1958.

Hayes-Roth, B., and F.A. Hayes-Roth. "A Cognitive Model of Planning." *Cognitive Science*, 3, 1979, pp. 275-323.

Herman, C.F. "Some Consequences of Crises Which Limit the Viability of Organizations," *Administrative Science Quarterly*, 1963, Vol. 8, pp. 61-82.

Herzberg, F., B. Mausner, and B.B. Snyderman. *The Motivation to Work* (2nd ed.), John Wiley & Sons, Inc., New York, 1959.

- Homans, G.C. *The Human Group*. Harcourt, Brace and Co., Inc., New York, 1950.
- Hunt, Earl. "A Cognitive Science and Psychometric Approach to Team Performance." In S.E. Goldin and E. Thorndyke, Eds., *Improving Team Performance: Proceedings of the Rand Team Performance Workshop*. The Rand Corporation, Santa Monica, Cal., 1980.
- Janowitz, M. *Sociology and the Military Establishment*. Russell Sage Foundation, New York, 1959.
- Kahn, R.L. "Productivity and Job Satisfaction." *Personnel Psychology*, 13, 1960, pp. 275-287.
- Kahn, R.L., and D. Katz. "Leadership Practices in Relation to Productivity and Morale." In D. Cartwright and A. Zander, Eds., *Group Dynamics: Research and Theory*. Row, Peterson, Evanston, Ill., 1953.
- Kahn, R.L., D.M. Wolfe, R.P. Quinn, J.D. Smoek, and R.A. Rosenthal. *Organizational Stress: Studies in Role Conflict and Ambiguity*. John Wiley & Co., New York, 1964.
- Katz, D., and R.L. Kahn. "Some Recent Findings in Human Relations Research." In L. Swanson, T. Newcomb, and E. Hartley, Eds., *Readings in Social Psychology*. Holt, Rinehart, & Winston, Inc., New York, 1952, pp. 650-665.
- Katz, D., and R.L. Kahn. *The Social Psychology of Organizations*. John Wiley & Sons, Inc., New York, 1966.
- Kelley, H.H., and J.R. Thibaut. "Group Problem Solving." In G. Lindzey and E. Aronson, Eds., *Handbook of Social Psychology* (2nd ed.), Vol. IV. Addison-Wesley, Reading, Mass., 1969, pp. 1-101.
- Kenney, G.C. *General Kenney Reports: A Personal History of the Pacific War*. Duell, Sloan, & Pearce, New York, 1949.
- Knerr, C.M., D.C. Berger, and B.A. Popelka. *Sustaining Team Performance*. Interim Report. Litton Mellonics, Springfield, Va., 1979.
- Knerr, C.M., L.B. Nadler, and L.E. Berger. *Toward A Naval Team Taxonomy*. Interim Report. Litton Mellonics, Springfield, Va., 1980.
- Koontz, H., and C. O'Donnell. *Principles of Management* (2nd ed.). McGraw-Hill, New York, 1959.
- Lawrence, P.R., and J.W. Lorsch. *Organization and Environment: Management Differentiation and Integration*. Harvard Graduate School of Business Administration, Boston, Mass., 1967.
- Leavitt, H.J. "Some Effects of Certain Communication Patterns on Group Performance." *Journal of Abnormal and Social Psychology*, 46, 1951, pp. 38-50.
- Lewin, K. "Time Perspective and Morale." In G. Watson, Ed., *Civilian Morale*. Houghton Mifflin Company, Boston, Mass., 1941.

- Lewin, K. "Frontiers in Group Dynamics." *Human Relations*, 1, 1947, pp. 5-42.
- Lewin, K., T. Dembo, L. Festinger, and P. Sears. "Level of Aspiration." In J. McV. Hunt, Ed., *Personality and the Behavior Disorders*. The Roland Press, New York, 1944.
- Lewin, K., R. Lippitt, and R.K. White. "Patterns of Aggressive Behavior in Experimentally Created 'Social Climates.'" *Journal of Social Psychology*, 10, 1939, pp. 512-532.
- Likert, R. "A Motivational Approach to a Modified Theory of Organization and Management." In M. Haire, Ed., *Modern Organization Theory*. John Wiley & Sons, New York, 1959, p. 207.
- Likert, R. *New Patterns of Management*. McGraw-Hill Book Co., New York, 1961.
- Likert, R. *The Human Organization: Its Management and Value*. McGraw-Hill, New York, 1967.
- Lynn, W.M., Jr. "Decentralization." *Army*, January 1963, pp. 42-43.
- McCurdy, H.G., and W.E. Lambert. "The Efficiency of Small Human Groups in the Solution of Problems Requiring Genuine Co-Operation." *Journal of Personality*, 20, 1952, pp. 478-152.
- McDavid, J.W., and H. Harari. *Social Psychology: Individuals, Groups, Societies*. Harper & Row, New York, 1968.
- McGregor, D. *The Human Side of Enterprise*. McGraw-Hill Book Company, Inc., New York, 1960.
- McGregor, D. *The Professional Manager*, W.G. Bennis and C. McGregor, Eds. McGraw-Hill Book Co., Inc., New York, 1967.
- Maier, N.R.F. *Psychology in Industry* (2nd ed.). Houghton-Mifflin, Boston, Mass., 1955.
- March, J.G., and H.A. Simon. *Organizations*. John Wiley & Sons, Inc., New York, 1958.
- Marschak, J. "Efficient and Viable Organization Forms." In M. Haire, Ed., *Modern Organization Theory*. John Wiley & Sons, Inc., New York, 1959.
- Maslow, A.H. *Motivation and Personality*. Harper & Row, New York, 1954.
- Maslow, A.H. *Motivation and Personality* (2nd ed.). Harper & Row, New York, 1970.
- Mayo, E. *The Human Problems of Industrial Civilization*. The Macmillan Company, New York, 1933.
- Meister, D. *Behavioral Foundations of System Development*. Wiley, New York, 1976.

Merton, R.K. "Bureaucratic Structure and Personality." *Social Forces*, 18, 1940, pp. 560-568.

Merton, R.K., and A.S. Kitt. "Contributions to the Theory of Reference Group Behavior." In R.K. Merton and P.F. Lazarsfeld, Eds., *Continuities in Social Research: Studies in the Scope and Method of "The American Soldier."* Free Press, Glencoe, Ill., 1950.

Miller, J.G. "Toward a General Theory for the Behavioral Sciences." *American Psychologist*, 10, 1955, pp. 513-531.

Mills, T.M. *The Sociology of Small Groups*. Prentice-Hall, Englewood Cliffs, N.J., 1967.

Milner, S. *United States Army in World War II, The War in the Pacific, Victory in Papua*. Office of the Chief of Military History, Department of the Army, Washington, D.C., 1957.

Nieva, V.F., E.A. Fleischman, and A. Rieck. *Team Dimensions: Their Identity, Their Measurement and Their Relationships*. Advanced Research Resources Organization, Washington, D.C., 1978.

Olmstead, J.A. *Leadership at Senior Levels of Command*. Human Resources Research Organization, Alexandria, Va., Research By-Product, 1965. Published as *Department of Army Pamphlet* No. 600-15, Headquarters, Department of the Army, October 1968.

Olmstead, J.A., M.J. Baranick, and B.L. Elder. *Research on Training for Brigade Command Groups: Factors Contributing to Unit Combat Readiness*. Technical Report No. FR-ED(C)-78-1. Human Resources Research Organization, Alexandria, Va., February 1978.

Olmstead, J.A., and H.E. Christensen. *Effects of Work Contexts: An Intensive Field Study. Research Report No. 2, National Study of Social Welfare and Rehabilitation Workers, Work, and Organizational Contexts*. Department of Health, Education, and Welfare, Social and Rehabilitation Service, Washington, D.C., 1973.

Olmstead, J.A., H.E. Christensen, and L.L. Lackey. *Components of Organizational Competence: Test of a Conceptual Framework*. Technical Report 73-19. Human Resources Research Organization, Alexandria, Va., August 1973.

Olmstead, J.A., H.E. Christensen, J.A. Salter, and L.L. Lackey. *Effects of Work Contexts in Public Welfare Financial Assistance Agencies*. Technical Report 75-7. Human Resources Research Organization, Alexandria, Va., July 1975.

Olmstead, J.A., and B.L. Elder. *Organizational Process Performance and Unit Mission Readiness: Training for Battalion Command Groups*. Final Report. Human Resources Research Organization, Alexandria, Va., November 1980.

Olmstead, J.A., B.L. Elder, and J.M. Forsyth. *Organizational Process and Combat Readiness: Feasibility of Training Organizational Effectiveness Staff Officers to Assess Command Group Performance*. Interim Report IR-ED-78-13. Human Resources Research Organization, Alexandria, Va., October 1978.

Palmer, F.H., and T.I. Myers. "Sociometric Choice and Group Productivity Among Radar Crews." *Proceedings of the American Psychological Association*, 1955.

Parsons, H.M. *Man-Machine System Experiments*. The Johns Hopkins Press, Baltimore, Md., 1972.

Parsons, T. "Suggestions for a Sociological Approach to the Theory of Organizations, I and II." *Administrative Science Quarterly*, 1 and 2, 1956, pp. 3-85 and 225-239.

Parsons, T. *Structure and Process in Modern Societies*. The Free Press, Glencoe, Ill., 1960.

Pepitone, A., and R. Kleiner. "The Effects of Threat and Frustration on Group Cohesiveness." *Journal of Abnormal and Social Psychology*, 54, 1957, pp. 192-200.

Porter, L.W., and E.E. Lawler. *Managerial Attitudes and Performance*. Richard D. Irwin and Dorsey Press, Homewood, Ill., 1968.

Pugh, D.S. "Modern Organizational Theory: A Psychological and Sociological Study." *Psychological Bulletin*, 66, 1966, pp. 235-251.

Rapaport, A. "A Logical Task as a Research Tool in Organization Theory." In M. Haire, Ed., *Modern Organization Theory*. John Wiley & Sons, New York, 1959.

Raven, B.H., and J. Rietsema. "The Effects of Varied Clarity of Group Goal and Group Path Upon the Individual and His Relation to His Group." *Human Relations*, 10, 1957, pp. 29-44.

Reicken, H.W., and G.C. Homans. "Psychological Aspects of Social Structure." In G. Lindzey, Ed., *Handbook of Social Psychology*, Vol. II. Addison-Wesley Publishing Co., Inc., Cambridge, Mass., 1954, p. 813.

Reitzel, W.A. *Background to Decision Making*. The United States Naval War College, Newport, Rhode Island, 1958.

Ridgeway, M.B. *Soldier: The Memoirs of Mathew B. Ridgeway*. Harper & Brothers, New York, 1956.

Roby, T.B. *Small Group Performance*. Rand McNally, Chicago, 1968.

Roethlisberger, F.J., and W.J. Dickson. *Management and the Worker*. Harvard University Press, Cambridge, Mass., 1939.

Schachter, S., N. Ellertson, D. McBride, and D. Gregory. "An Experimental Study of Cohesiveness and Productivity." *Human Relations*, 4, 1951, pp. 229-233.

Schein, E.H. *Organizational Psychology*. Prentice-Hall, Inc., Englewood Cliffs, N.J., 1965.

Schein, E.H. *Organizational Psychology* (2nd ed.). Prentice-Hall, Inc., Englewood Cliffs, N.J., 1970.

Seashore, S.E. *Group Cohesiveness in the Industrial Work Group*. Institute for Social Research, Ann Arbor, Michigan, 1954.

Selznick, P. *Leadership in Administration: A Sociological Interpretation*. Row, Peterson & Company, Evanston, Ill., 1957.

Shepard, H.A. "Changing Interpersonal and Intergroup Relationships in Organizations." In J. March, Ed., *Handbook of Organizations*. Rand McNally & Company, Chicago, 1965.

Sherif, M. *The Psychology of Social Norms*. Harper, New York, 1936.

Sherif, M. "Introductory Statement." In M. Sherif, Ed., *Intergroup Relations and Leadership: Approaches and Research in Industrial, Ethnic, Cultural, and Political Areas*. John Wiley & Sons, Inc., New York, 1962, p. 10.

Sherif, M., and H. Cantril. *The Psychology of Ego-Involvements: Social Attitudes and Identifications*. John Wiley & Sons, Inc., New York, 1947.

Sherif, M., and C.W. Sherif. *Groups in Harmony and Tension*. Harper and Brothers, New York, 1953.

Sherif, M., and C.W. Sherif. *An Outline of Social Psychology* (rev. ed.). Harper & Brothers, New York, 1956, pp. 143-331.

Shiflett, S. "Toward A General Model of Small Group Productivity." *Psychological Bulletin*, 86, 1979, pp. 67-79.

Shils, E.A., and M. Janowitz. "Cohesion and Disintegration in the Wehrmacht in World War II." *Public Opinion Quarterly*, 1948, 12, pp. 280-315.

Simon, H.A. *Administrative Behavior: A Study of Decision-Making Processes in Administrative Organization*. The Macmillan Company, New York, 1947.

Simon, H.A. *Models of Man*. John Wiley & Sons, Inc., New York, 1957a.

Simon, H.A. *Administrative Behavior: A Study of Decision-Making Processes in Administrative Organization* (2nd ed.). The Macmillan Company, New York, 1957b.

Slim, W.J. *Defeat into Victory*. David McKay Co., Inc., New York, 1961.

Speroff, B.J. "Sociometry: A Key to the Informal Organization." *Personnel Journal*, 47, 1968, pp. 121-123.

Steiner, I.D. *Group Process and Productivity*. Academic Press, New York, 1972.

Stogdill, R.M. "Dimensions of Organization Theory." In *Approaches to Organizational Design*. J.D. Thompson, Ed., University of Pittsburgh Press, Pittsburgh, 1966, pp. 1-56.

Stogdill, R.M. "Group Productivity, Drive, and Cohesiveness." *Organizational Behavior and Human Performance*, 8, 1972, pp. 26-43.

Taylor, D.W. "Decision Making and Problem Solving." In J.G. March, Ed., *Handbook of Organization*. Rand McNally & Company, Chicago, 1965.

Thompson, J.D., Ed. *Approaches to Organizational Design*. University of Pittsburgh Press, Pittsburgh, Pa., 1966.

Thorndyke, P.W., and M.G. Weiner. *Improving Training and Performance of Navy Teams: A Design for a Research Program*. Rand Report R-2607-ONR. Rand Corporation, Santa Monica, 1980.

Tiede, R.V., and L.A. Leake. "A Method for Evaluating the Combat Effectiveness of a Tactical Information System in a Field Army." *Operations Research*, Vol. 19, pp. 587-604, 1971.

Tiffin, J., and E. McCormick. *Industrial Psychology* (4th ed.). Prentice-Hall, Englewood Cliffs, N.J., 1958.

Truscott, L.K., Jr. *Command Missions: A Personal Story*. E.P. Dutton & Company, Inc., New York, 1954.

Van Zelst, R.H. "Sociometrically Selected Work Teams Increase Production." *Personnel Psychology*, 5, 1951, pp. 175-185.

von Bertalanffy, L. "General Systems Theory." *Yearbook of the Society for General Systems Research*, 18, 1956, pp. 21-32.

von Neuman, J., and O. Morgenstern. *Theory of Games and Economic Behavior*. Princeton University Press, Princeton, N.J., 1944.

Wagner, H., N. Hibbits, R.D. Rosenblatt, and R. Schulz. *Team Training and Evaluation Strategies: State of the Art*. Human Resources Research Organization, Alexandria, Va., 1977.

Weber, M. *The Theory of Social and Economic Organization*. The Free Press, Glencoe, Ill., 1947 (reprinted and translated).

Whyte, W.F. *Man and Organization*. Richard D. Irwin, Inc., Homewood, Ill., 1959.

Whyte, W.F. *Men at Work*. The Dorsey Press, Inc., and Richard D. Irwin, Inc., Homewood, Ill., 1961.

Williams, H.B. "Some Functions of Communications in Crisis Behavior." *Human Organization*, 16, 1957, pp. 15-19.

Zaleznik, A., C.R. Christensen, and F.J. Roethlisberger. *The Motivation, Productivity, and Satisfaction of Workers: A Prediction Study*. Graduate School of Business Administration, Harvard University, Boston, Mass., 1958.

Zaleznik, A., and D. Moment. *The Dynamics of Interpersonal Behavior*. John Wiley & Sons, Inc., New York, 1964.

APPENDIX A

**GENERAL QUESTIONS ABOUT BATTLE STAFF
COMPETENCE**

APPENDIX A

GENERAL QUESTIONS ABOUT BATTLE STAFF COMPETENCE

SENSING

- Was all information that was available to the organization obtained by it?
- Were attempts to obtain information relevant and effective?
- Was acquired information processed, integrated, recorded, and stored so as to have maximum utility?
- Was correct interpretation placed upon information that was obtained?
- In view of the information available to the organization, was a correct assessment made of it?
- Was sensing performed effectively at all levels?

COMMUNICATING INFORMATION

- Was information sensed by the organization communicated to everyone who needed it when they needed it?
- Was communication of information complete, accurate, and timely?
- Was communication of information efficient?

DECISION-MAKING

- Was all relevant available information used in decision-making?
- Were the decisions made at each level correct in view of information available to decision-makers?
- Were decisions timely?

STABILIZING

When decisions were made, were their potential effects upon the organization taken into account and actions taken to counter any negative effects or to prevent excessive turbulence?

Were internal operations or organizational arrangements adjusted appropriately to accommodate new decisions, developments, or requirements?

Were unit procedures and practices sufficiently flexible to enable the unit to adjust its activities easily to changed conditions and situations?

COMMUNICATING IMPLEMENTATION

After decisions, was communication about implementation requirements complete, accurate, and timely?

Did all communication links between decision makers and executing personnel function effectively and efficiently?

Was everyone informed who should have been informed about implementation decisions and requirements?

COPING ACTIONS

Was execution of actions correct and effective?

Were the actions executed in accord with the intent of the decisions and plans from which they derived?

Were all actions leading from decisions actually carried out, i.e., were there any aborted decisions?

What were the effects of aborted decisions and plans?

FEEDBACK

Was action taken to obtain information about the outcomes of decisions or actions?

Was information obtained in follow-ups used to modify activities or make new plans or decisions?

APPENDIX B

**OPERATIONAL DEFINITIONS FOR
ORGANIZATIONAL PROCESSES**

APPENDIX B

OPERATIONAL DEFINITIONS FOR ORGANIZATIONAL PROCESSES

SENSING

Definition

The act of acquiring information from or concerning any environment of the organization. Includes processing and storage of information.

Identification Criteria

1. Any act by a player¹ of receiving, obtaining, or attempting to obtain information, orders, instructions or recommendations from someone or something outside of the "organization." May involve passive receipt of information without initiative to obtain it, or may involve active attempts to obtain information.
2. Involves player-controller or player-simulator interaction in any mode.

¹ "Player" refers to *participating* members of the battle staff or of the organization that is being analyzed.

OPERATIONAL DEFINITIONS FOR ORGANIZATIONAL PROCESSES

COMMUNICATING INFORMATION

Definition

Those activities through which information which has been sensed by some member of the organization is made available to those who must act on it or make decisions about it.

Identification Criteria

1. Transmission and discussion of information by players after it has been sensed and before a decision has been made about it.
2. May pass through several links between sensing personnel and decision makers.
3. Player-player interaction, except where player informs Brigade controllers or subordinate unit controllers about information sensed.
4. May involve:
 - a. Initial transmittal of information by sensing individual.
 - b. Passing on of information by linking personnel.
 - c. Dissemination of information throughout organization.
 - d. Discussion and interpretation-Discussion for clarification or implication.
5. Includes communication of recommendations from subordinate units to commander.

OPERATIONAL DEFINITIONS FOR ORGANIZATIONAL PROCESSES

DECISION MAKING

Definition

Deliberative activities of one or more persons leading to a conclusion that some action will, should, or should not, be taken by the organization. Usually evidenced by the initial communication of the decision by the decision maker. The communication may take the forms of announcement of the decision, a command, an order, or instructions. Decisions may lead to Active Sensing, formal Sensing Actions, Stabilizing Actions, Coping Actions, or Feedback Actions. Decision making includes decisions to rescind decisions. Decision making is not limited to commanders, it may include all players.

Identification Criteria

1. A communication of some sort reflecting the intention to take some kind of action.
2. Most often, the first evidence that a decision has been made will be a command, order, or instruction (oral or written) issued by the decision maker.
3. Usually player-player interaction; but, at lower boundary of simulated organization, may involve player-controller interaction.

OPERATIONAL DEFINITIONS FOR ORGANIZATIONAL PROCESSES

STABILIZING

Definition

Actions intended to adjust internal operations, maintain internal stability or unit integrity, or prevent disruptions and negative side effects, as a consequence of coping actions. All actions intended to prevent potential negative effects to the organization which might occur because of Coping Actions, or to enhance integration.

Identification Criteria

1. Player/player interaction.
2. Limited to actions specifically intended to moderate the potential side effects of Coping Actions or to adjust internal organization or operation necessitated by the potential effects of a Coping Action, or to prevent loss of integration.

OPERATIONAL DEFINITIONS FOR ORGANIZATIONAL PROCESSES

COMMUNICATING IMPLEMENTATION

Definition

Those activities through which decisions and requirements resulting from decisions are communicated to those individuals or units who must implement the decisions. Includes:

- (1) transmission of orders or instructions and
- (2) discussion and interpretation--those communications through which clarification is achieved and implications for actions are discussed. Includes all communication links between decision maker and final implementer of decision.

Identification Criteria

1. Player/player interaction.
2. Occurs after decision and before action.
3. Includes orders, instructions, and discussion of them and their implications, including clarification and attempts to obtain clarification.
4. Limited to communication about actions to be taken.
5. May pass through several links between decision maker and executor of action.

OPERATIONAL DEFINITIONS FOR ORGANIZATIONAL PROCESSES

COPING ACTIONS

Definition

The process of executing actions against target environments.

Primarily concerned with execution and with how actions are carried out.

Identification Criteria

1. Player/controller interaction, except in field exercises or full unit simulations.
2. Actions taken at the point of contact with target environments, i.e., at boundaries of "organization."
3. Actions to "do something to" the external environment, i.e., to change or cope with the target environment.
4. Does *not* include actions to obtain information (sensing).
5. In battle simulations, coping actions may take form of orders or instructions to subordinate units played by controllers.

OPERATIONAL DEFINITIONS FOR ORGANIZATIONAL PROCESSES

FEEDBACK

Definition

Activities that assist the organization to evaluate the effectiveness of its actions and that provide information upon which adjustments and future actions can be based.

Identification Criteria

1. Formal actions taken to obtain information about the results or effects of Coping Actions.
2. Player/controller interaction only, except in field exercises or full-unit simulations.
3. Should be preceded by an organizational decision to initiate a feedback.

APPENDIX C

CRITERIA FOR ASSESSING QUALITY OF PROCESS PERFORMANCE

APPENDIX C

CRITERIA FOR ASSESSING QUALITY OF PROCESS PERFORMANCE

SENSING

1. Accurate detection of all available information.
2. Correct interpretation (attachment of correct meaning) of all detected information, to include appropriate weighting of its importance.
3. Accurate discrimination between relevant and irrelevant information.
4. Attempts to obtain information are relevant to mission, task, or problem.
5. Sensing activities are timely in relation to information requirements and the tactical situation of the moment.
6. Internal processing and recording of information provides ready availability to users.

COMMUNICATING INFORMATION

1. Accuracy of transmission of available information.
2. Sufficiently complete to transmit full and accurate understanding to receivers of communications.
3. Timeliness appropriate to unit requirements.
4. Correct choice of recipients; everyone who needs information receives it.
5. Whether message should have been communicated.

DECISION MAKING

1. Adequacy--Was the decision adequately correct in view of circumstances and information available to the decision maker?
2. Appropriateness--Was the decision timely in view of the information available to the decision maker?
3. Completeness--Did the decision take into account all or most contingencies, alternatives, and possibilities?

STABILIZING

1. Adequacy--Action is correct in view of the operational situation and conditions which the action is intended to change or overcome.
2. Appropriateness--Timing is appropriate in view of the situation, conditions, and intended effects. Choice of target of the action is appropriate.
3. Completeness--Action fully meets the requirements of the situation.

COMMUNICATING IMPLEMENTATION

1. Accuracy of transmission of instructions.
2. Sufficient completeness to transmit adequate and full understanding of actions required.
3. Timely transmission in view of both available information and the action requirements of the participants.
4. Transmission to appropriate recipients.
5. "Discussion or interpretation" is efficient, relevant, and achieves its purpose.
6. Whether message should have been communicated?

COPING ACTIONS

1. Correctness of actions in view of both the current operational circumstances and the decision or order from which the action derives.
2. Timeliness of the action in view of both operational circumstances and the decision or order from which the action derives.
3. Correctness of choice of target of the action.
4. Adequacy of execution of action.

FEEDBACK

1. Correctness of the decision and action to obtain feedback in view of operational circumstances, the preceding actions whose results are being evaluated, and current information requirements.
2. Timeliness of the feedback decision and action.
3. Correctness of choice of target(s) of the action.
4. Appropriate use of feedback information in new actions, decisions, and plans.

APPENDIX D

PROCESS ASSESSMENT FORM

APPENDIX D

PROCESS ASSESSMENT FORM

Use the scale shown below to rate the overall performance of the organization *as a unit* on each item. Determine the quality of performance based on the appropriate assessment criteria and use the scale to select the description that best fits your assessment of performance of the process being rated. Enter in the space preceding each item the number of the descriptor that best fits your assessment. Items within processes may be summed to obtain a process score. A total of all item scores provides an Organizational Competence score. Complete the form after each phase or after termination of exercise.

Scale

4 - Excellent

3 - Adequate

2 - Marginal

1 - Poor.

SENSING

- _____ 1. All information that might have been available to the organization was obtained by it.
- _____ 2. Attempts to obtain information were relevant and effective.
- _____ 3. Correct interpretation was placed upon information that was obtained.
- _____ 4. In view of the information available to the organization, correct assessments were made.
- _____ 5. Acquired information was processed, integrated, recorded and stored so as to have maximum utility.
- _____ Total for Sensing

COMMUNICATING INFORMATION

- _____ 6. Information that was sensed by the organization was communicated to everyone who needed it.
- _____ 7. Communication of information was complete, accurate, and timely.
- _____ 8. Communication of information was efficient.
- _____ Total for Communicating Information.

DECISION MAKING

- _____ 9. All relevant, available information was used in making decisions.
- _____ 10. Most decisions were correct in light of the information that was available to decision-makers.
- _____ 11. Decisions were timely.
- _____ Total for Decision Making

STABILIZING

- _____ 12. When action decisions were made, their potential effects upon the organization were considered and actions or plans were developed to counter any negative effects.
- _____ 13. Internal operations and organizational arrangements were adjusted to accommodate to new decisions, developments, or requirements.
- _____ 14. Unit procedures and practices were sufficiently flexible to enable the unit to adjust its activities easily to changed conditions and situations.
- _____ Total for Stabilizing.

COMMUNICATING IMPLEMENTATION

- _____ 15. All communication about implementation requirements was complete, accurate, and timely.
- _____ 16. Communication links between decision makers and executing personnel functioned effectively and efficiently.
- _____ 17. Everyone was informed who should have been informed about implementation decisions and requirements.
- _____ Total for Communicating Implementation

COPING ACTIONS

- _____ 18. Execution of actions was correct and effective.
- _____ 19. Actions were executed in accordance with the intent of the decisions and plans from which they derived.
- _____ 20. Actions leading from decisions were actually carried out, i.e., no aborted decisions.
- _____ Total for Coping Actions

FEEDBACK

- _____ 21. Where appropriate, actions were taken to obtain information about the outcomes of decisions and actions.
- _____ 22. Information obtained in follow-ups was used to modify activities or make new plans or decisions.
- _____ Total for Feedback

_____ Total for Organizational Competence (all items)

APPENDIX E

BATTLE STAFF COMPETENCE SURVEY **(TO BE COMPLETED BY ALL BATTLE STAFF MEMBERS)**

APPENDIX E
BATTLE STAFF COMPETENCE SURVEY
(TO BE COMPLETED BY ALL BATTLE STAFF MEMBERS)

1. How effective was your battle staff at acquiring from external sources full and accurate information about changes, requirements, developments, and conditions that affect the unit, its personnel, and its activities?

_____	Highly Effective	5
_____	Moderately Effective	4
_____	Somewhat Effective	3
_____	Not Very Effective	2
_____	Not at all Effective	1

2. How effective was your battle staff at obtaining full and accurate information about internal conditions within the unit?

_____	Highly Effective	5
_____	Moderately Effective	4
_____	Somewhat Effective	3
_____	Not Very Effective	2
_____	Not at all Effective	1

3. How effective was your battle staff at processing, coordinating, and using acquired information for planning and decision-making?

_____	Highly Effective	5
_____	Moderately Effective	4
_____	Somewhat Effective	3
_____	Not Very Effective	2
_____	Not at all Effective	1

4. How effective was your battle staff at communicating information that was acquired to those members of the unit who need it for planning, making decisions, and taking actions?

_____	Highly Effective	5
_____	Moderately Effective	4
_____	Somewhat Effective	3
_____	Not Very Effective	2
_____	Not at all Effective	1

5. How effective was decision-making in your battle staff about what actions to take and how to meet work or operational problems? Consider both quality and timeliness of decisions.

_____	Highly Effective	5
_____	Moderately Effective	4
_____	Somewhat Effective	3
_____	Not Very Effective	2
_____	Not at all Effective	1

6. How effective was your battle staff at preventing excessive turbulence and keeping things running smoothly when major changes took place?

_____	Highly Effective	5
_____	Moderately Effective	4
_____	Somewhat Effective	3
_____	Not Very Effective	2
_____	Not at all Effective	1

7. How effective was your battle staff at easily adjusting procedures and operations to meet changed requirements and conditions?

_____	Highly Effective	5
_____	Moderately Effective	4
_____	Somewhat Effective	3
_____	Not Very Effective	2
_____	Not at all Effective	1

8. How effective was your battle staff at communicating decisions, orders, and instructions to those personnel who actually had to carry out the desired actions?

_____	Highly Effective	5
_____	Moderately Effective	4
_____	Somewhat Effective	3
_____	Not Very Effective	2
_____	Not at all Effective	1

9. How effective was your battle staff at coordinating different but related activities in order to accomplish unit objectives?

_____	Highly Effective	5
_____	Moderately Effective	4
_____	Somewhat Effective	3
_____	Not Very Effective	2
_____	Not at all Effective	1

10. How effective was your battle staff in actual execution of all of the actions needed to accomplish unit objectives and get the work done?

_____	Highly Effective	5
_____	Moderately Effective	4
_____	Somewhat Effective	3
_____	Not Very Effective	2
_____	Not at all Effective	1

11. How effectively did your battle staff obtain information about results of its activities and actions and use this information to improve future operations?

_____	Highly Effective	5
_____	Moderately Effective	4
_____	Somewhat Effective	3
_____	Not Very Effective	2
_____	Not at all Effective	1